

LONDON-WEST MIDLANDS ENVIRONMENTAL STATEMENT

Volume 5 | Map books

Sound, noise and vibration - Euston and London Metropolitan (*Part 1 of 4*)

November 2013

ES 3.5.1.9.1



Department
for Transport

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URS

High Speed Two (HS2) Limited,
Eland House,
Bressenden Place,
London SW1E 5DU

Details of how to obtain further copies are available from HS2 Ltd.

Telephone: 020 7944 4908

General email enquiries: HS2enquiries@hs2.org.uk

Website: www.hs2.org.uk

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|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Map series description | <p><i>SV-01 presents the predicted operational sound from the new railway.</i></p> <p><i>The sound levels from the new railway (expressed as LpAeq,T) are presented in typical noise mapping colours in 5 dB steps. There is a panel at the top right of the figure; the left-hand section of this panel contains a key communicating the night-time and daytime sound levels represented by the various colours. The right-hand part of the same panel contains text explaining how the sound levels presented on the figure inform the assessment of direct noise impacts and likely significant effects. A corresponding and similar panel is found on SV-02, along with the key sound contours that were used within the environmental assessment.</i></p> | <p><i>SV-02 presents the direct operational noise impacts and likely significant effects of the Proposed Scheme.</i></p> <p><i>The SV-02 figure series necessarily contains a large amount of information relating to the operational noise and vibration assessment. It is designed to communicate visually the assessment process from the prediction of impacts to the determination of likely residual significant effects. The corresponding text is included in Volume 2 and Volume 5.</i></p> | <p><i>The SV-03 figure series accompanies the construction noise & vibration assessments. It shows the locations at which a quantitative assessment of the direct effects of construction noise and/or vibration has been carried out. These are labelled as assessment locations with a reference number to enable cross-reference to the construction noise and vibration reports contained in Volume 5: Appendix SV-003 and Volume 5: Appendix SV-002.</i></p> <p><i>The figure series also shows locations at which baseline sound measurements were carried out. These baseline measurement locations are labelled with a reference number to enable cross-reference to the baseline sound reports contained in Volume 5: Appendix SV-002.</i></p> | <p><i>The SV-04 figure series shows the locations at which a quantitative assessment of the direct effects of operational sound and/or vibration has been carried out. These are labelled as assessment locations with a reference number to enable cross-reference to the operational sound and vibration reports contained in Volume 5: Appendix SV-004 and Volume 5: Appendix SV-002.</i></p> <p><i>The figure series also shows locations at which baseline sound measurements were carried out. These baseline measurement locations are labelled with a reference number to enable cross-reference to the baseline sound reports contained in Volume 5: Appendix SV-002.</i></p> |
| Community Forum Area name | | | | |
| CFA 01 – Euston – Station and Approach | ✓ | ✓ | ✓ | ✓ |
| CFA 02 – Camden Town and HS1 Link | ✓ | ✓ | ✓ | ✓ |
| CFA 03 – Primrose Hill to Kilburn (Camden) | ✗ | ✓ | ✓ | ✓ |
| CFA 04 – Kilburn (Brent) to Old Oak Common | ✓ | ✓ | ✓ | ✓ |
| CFA 05 – Northolt Corridor | ✗ | ✓ | ✓ | ✓ |
| CFA 06 – South Ruislip to Ickenham | ✓ | ✓ | ✓ | ✓ |

Mapping explanatory notes

Copyright statements

Copyright statements are presented in the data dictionary and definitions section at the front of the map book, due to limited space to include this on the individual maps themselves.

Ordnance Survey data

All maps produced as part of the London-West Midlands Environmental Statement (ES) contain Ordnance Survey (OS) data. HS2 Ltd uses the most up-to-date mapping available, where possible, supplied by the OS. As such, we cannot be held responsible for any inaccuracies within this data.

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Chainage

Most of the maps presented as part of the ES have a chainage value shown next to the alignment. Chainage is presented on the maps in black font, in the form of XX+YYY, for example: 77+000.

Chainage (known as reference chainage) is referenced from Euston station, which is 0+000, and the value presented is in metres. For example, 77+000 refers to the point 77,000m, or 77km, from Euston station. Chainage values increase in intervals dependant on the map scale. For maps at 1:50,000, scale chainage is shown at 5km intervals. For maps at 1:25,000, scale chainage is shown at 2km intervals. For maps at 1:10,000, 1:5,000 and 1:2,500 scales, chainage is shown at 1km intervals.

Chainage has been included on the maps as a useful tool for comparing map sets showing the different environmental themes or engineering plans, due to map sets having different scales and therefore showing differing amounts of alignment on the map.

Map orientation

The majority of the maps presented in these map books are presented with the railway alignment running horizontally across the page. The direction of travel to London would be following the alignment to the right hand side of the page, and the West Midlands to the left.

The exceptions to this are map series LV-02, LV-03, LV-04, LV-07 and LV-08, which present the alignment running from the bottom to the top of the page. This is to allow more of the modelled outputs to be shown at the appropriate map scale. In this instance, the direction of travel to London would be to the bottom of the page, and the West Midlands to the top.

Map books

There are a total of 76 map books in the ES, spread across Volumes 2, 4 and 5. A list of the titles is provided in the table below for reference.

| Name | Name |
|--------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| Volume 2 Map Books Community Forum Area: 01 Euston – Station and Approach | Volume 5 Map Books: Ecology – Community Forum Area: 05 Northolt Corridor |
| Volume 2 Map Book s Community Forum Area: 02 Camden Town and HS1 Link | Volume 5 Map Books: Ecology – Community Forum Area: 06 South Ruislip to Ickenham |
| Volume 2 Map Books Community Forum Area: 03 Primrose Hill to Kilburn (Camden) | Volume 5 Map Books: Ecology – Community Forum Area: 07 Colne Valley |
| Volume 2 Map Books Community Forum Area: 04 Kilburn (Brent) to Old Oak Common | Volume 5 Map Books: Ecology – Community Forum Area: 08 The Chalfonts and Amersham |
| Volume 2 Map Books Community Forum Area: 05 Northolt Corridor | Volume 5 Map Books: Ecology – Community Forum Area: 09 Central Chilterns |
| Volume 2 Map Books Community Forum Area: 06 South Ruislip to Ickenham | Volume 5 Map Books: Ecology – Community Forum Area: 10 Dunsmore, Wendover and Halton |
| Volume 2 Map Books Community Forum Area: 07 Colne Valley | Volume 5 Map Books: Ecology – Community Forum Area: 11 Stoke Mandeville and Aylesbury |
| Volume 2 Map Books Community Forum Area: 08 The Chalfonts and Amersham | Volume 5 Map Books: Ecology – Community Forum Area: 12 Waddesdon and Quainton |
| Volume 2 Map Books Community Forum Area: 09 Central Chilterns | Volume 5 Map Books: Ecology – Community Forum Area: 13 Calvert, Steeple Claydon, Twyford and Chetwode |
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| Volume 2 Map Books Community Forum Area: 22 Whittington to Handsacre | Volume 5 Map Books: Ecology – Community Forum Area: 26 Washwood Heath to Curzon Street |
| Volume 2 Map Books Community Forum Area: 23 Balsall Common and Hampton-in-Arden | Volume 5 Map Books: Land Quality |
| Volume 2 Map Books Community Forum Area: 24 Birmingham Interchange and Chelmsley Wood | Volume 5 Map Books: Landscape and Visual – Euston and London Metropolitan |
| Volume 2 Map Books Community Forum Area: 25 Castle Bromwich and Bromford | Volume 5 Map Books: Landscape and Visual – Country South |
| Volume 2 Map Books Community Forum Area: 26 Washwood Heath to Curzon Street | Volume 5 Map Books: Landscape and Visual – Country North |
| Volume 4 Map Books Off Route Effects | Volume 5 Map Books: Landscape and Visual – West Midlands Metropolitan |
| Volume 5 Map Books: Agriculture, Forestry and Soils | Volume 5 Map Books: Socio-Economic |
| Volume 5 Map Books: Air Quality | Volume 5 Map Books: Sound, Noise and Vibration – Euston and London Metropolitan |
| Volume 5 Map Books: Community | Volume 5 Map Books: Sound, Noise and Vibration – Country South |
| Volume 5 Map Books: Cultural Heritage – Euston and London Metropolitan | Volume 5 Map Books: Sound, Noise and Vibration – Country North |
| Volume 5 Map Books: Cultural Heritage – Country South | Volume 5 Map Books: Sound, Noise and Vibration – West Midlands Metropolitan |
| Volume 5 Map Books: Cultural Heritage – Country North | Volume 5 Map Books: Traffic and Transport |
| Volume 5 Map Books: Cultural Heritage – West Midlands Metropolitan | Volume 5 Map Books: Water Resources – Euston and London Metropolitan |
| Volume 5 Map Books: Ecology – Community Forum Area: 01 Euston - Station and Approach | Volume 5 Map Books: Water Resources – Country South |
| Volume 5 Map Books: Ecology – Community Forum Area: 02 Camden Town and HS1 Link | Volume 5 Map Books: Water Resources – Country North |
| Volume 5 Map Books: Ecology – Community Forum Area: 03 Primrose Hill to Kilburn (Camden) | Volume 5 Map Books: Water Resources – West Midlands Metropolitan |
| Volume 5 Map Books: Ecology – Community Forum Area: 04 Kilburn (Brent) to Old Oak Common | Volume 5 Map Books: Cross Topic Appendix 1: Committed Developments |

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LONDON-WEST MIDLANDS ENVIRONMENTAL STATEMENT

Data dictionary and definitions

Data dictionary and definitions

| Legend features | Definition | Source | Copyright |
|----------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------------------------------------------------------------------|
| Airborne sound and vibration assessment location | Locations near surface sections of the route at which a quantitative assessment of airborne sound and ground-borne vibration impacts due to the operation of the Proposed Scheme has been carried out. These are labelled with an assessment location reference code to enable cross-reference to the operational sound and vibration reports contained in Volume 5: Appendix SV-004. | High Speed Two (HS2) Ltd | |
| Airborne sound assessment location | Locations at which a quantitative assessment of airborne sound impacts due to the operation of the Proposed Scheme has been carried out. These are labelled with an assessment location reference code to enable cross-reference to the operational sound and vibration reports contained in Volume 5: Appendix SV-004. | High Speed Two (HS2) Ltd | |
| Airborne sound, ground-borne sound and vibration assessment location | Locations at which a quantitative assessment of airborne sound, ground-borne sound and vibration impacts due to the operation of the Proposed Scheme has been carried out. These are labelled with an assessment location reference code to enable cross-reference to the operational sound & vibration reports contained in Volume 5: Appendix SV-004. | High Speed Two (HS2) Ltd | |
| Airborne sound study area | This defines the area within which operational airborne sound impacts of the scheme have been quantitatively assessed. This area is defined as within 1km of surface sections of the route in rural areas and within 500m of surface sections of the route in urban areas. | High Speed Two (HS2) Ltd | |
| Baseline measurement locations | These represent locations at which sound measurements were carried out as part of the baseline sound surveys. Measurements of existing baseline sound levels at these locations have been used to derive baseline sound levels at operational and construction sound assessment locations. These baseline measurement locations are labelled with a reference number which enables cross-reference to the baseline sound reports contained in Volume 5: Appendix SV-002, which also describes how these are linked to baseline levels at assessment locations. | High Speed Two (HS2) Ltd | |
| Committed developments | <p>This informs the assessment of the future baseline.</p> <p>A development consent or allocation that has full or outline planning permission, or is allocated in an adopted development plan.</p> | High Speed Two (HS2) Ltd | © Crown Copyright and database rights 2013 Ordnance Survey Licence Number 100049190. |
| Community Forum boundary | The Environmental Statement has been split into 26 sections called Community Forum Areas. | High Speed Two (HS2) Ltd | © Crown Copyright and database rights 2013 Ordnance Survey Licence Number 100049190. |
| Construction airborne sound and vibration assessment location | Locations at which a quantitative assessment of construction noise and vibration impacts of the Proposed Scheme has been carried out. These are labelled with an assessment location reference code to enable cross-reference to the construction sound & vibration reports contained in Volume 5: Appendix SV-003. | High Speed Two (HS2) Ltd | |
| Construction airborne sound assessment location | Locations at which a quantitative assessment of construction noise impacts of the Proposed Scheme has been carried out. These are labelled with an assessment location reference code to enable cross-reference to the construction sound & vibration reports contained in Volume 5: Appendix SV-003. | High Speed Two (HS2) Ltd | |

| Legend features | Definition | Source | Copyright |
|------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------------------------------------------------------------------|
| Construction vibration assessment locations | Locations at which a quantitative assessment of construction vibration impacts of the Proposed Scheme has been carried out. These are labelled with an assessment location reference code to enable cross-reference to the construction sound & vibration reports contained in Volume 5: Appendix SV-003. | High Speed Two (HS2) Ltd | |
| County boundary | County boundaries from Ordnance Survey boundary mapping. | Ordnance Survey | © Crown Copyright and database rights 2013 Ordnance Survey Licence Number 100049190. |
| Depot, station, headhouse or portal building | Extends to cover operational footprint of each depot and station and the footprint of each tunnel vent shaft and headhouse at surface level. Excludes any ancillary buildings associated with these structures. | High Speed Two (HS2) Ltd | |
| District/Borough boundary | Ordnance Survey local authority boundary mapping. | Ordnance Survey | © Crown Copyright and database rights 2013 Ordnance Survey Licence Number 100049190. |
| Engineering earthworks: cutting | Cuttings created in the construction of the railway and associated works such as highways. | High Speed Two (HS2) Ltd | |
| Engineering earthworks: embankment | Embankments created in the construction of the railway and associated works such as highways. | High Speed Two (HS2) Ltd | |
| Envisaged measures further reducing noise effects | <p>Other environmental features e.g. landscaping: These lines represent environmental mitigation features provided for reasons other than noise mitigation which also reduce sound levels from the Proposed Scheme to the surrounding environment. These features are not placed specifically to reduce or remove a likely significant noise effect. Examples include landscaping and visual mitigation earthworks (non-engineering earthworks).</p> <p>Engineering e.g. cuttings: These lines represent engineering features which reduce sound levels from the Proposed Scheme to the surrounding environment but are not placed specifically to reduce or remove a likely significant noise effect. Examples include cuttings and safety barriers on viaducts which are not close to sensitive receptors.</p> | High Speed Two (HS2) Ltd | |
| Envisaged mitigation to avoid/reduce significant noise effects | <p>Landscaping and/or fence barriers: These lines represent the envisaged mitigation provided specifically to reduce sound levels from the Proposed Scheme at sensitive receptors in order to reduce or remove likely operational significant noise effects. Examples include noise fence barriers or earth bunds (non-engineering earthworks) acting as noise barriers. These features are labelled with the height of the top of the barrier/bund above rail level.</p> <p>Engineering e.g. cuttings (green tunnels separately marked): These lines represent engineering features of the route which reduce sound levels from the Proposed Scheme at potentially significant sensitive receptors. These features, therefore, serve a material purpose in reducing or avoiding likely significant noise effects. Examples include engineering cuttings near to sensitive receptors. These features are labelled with the height of the top of the feature above rail level.</p> | High Speed Two (HS2) Ltd | |
| Ground-borne sound & vibration study area (highly sensitive non-residential) | This defines the area within which direct operational ground-borne sound and vibration impacts of the scheme at highly sensitive non-residential receptors have been quantitatively assessed. This area is defined as within 200m of the route. | High Speed Two (HS2) Ltd | |
| Ground-borne sound & vibration study area (residential and non-residential) | This defines the area within which direct operational ground-borne sound and vibration impacts of the scheme at residential and non-residential receptors have been quantitatively assessed. This area is defined as within 85m of the route. | High Speed Two (HS2) Ltd | |

| Legend features | Definition | Source | Copyright |
|------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|-----------|
| Ground-borne sound and/or vibration assessment location | Locations near tunnelled sections of the route at which a quantitative assessment of ground-borne sound and vibration impacts due to the operation of the Proposed Scheme has been carried out. These are labelled with an assessment location reference code to enable cross-reference to the operational sound & vibration reports contained in Volume 5: Appendix SV-004. | High Speed Two (HS2) Ltd | |
| Minor ground-borne noise or vibration impact | Buildings at which a minor operational ground-borne sound or vibration impact is predicted from the Proposed Scheme. | High Speed Two (HS2) Ltd | |
| Non-engineering earthworks: cutting | Cuttings created in the construction of landscape features and mitigation measures. | High Speed Two (HS2) Ltd | |
| Non-engineering earthworks: embankment | Embankments created in the construction of landscape features and mitigation measures. | High Speed Two (HS2) Ltd | |
| Operational airborne sound impacts at buildings | The buildings shown on SV-02 and SV-05 are colour-coded according to the magnitude of the predicted noise impacts of the Proposed Scheme. Noise impacts are calculated by comparing the sound levels predicted if the Proposed Scheme did not go ahead with those if it did (details of this process can be found in Volume 5: Appendix SV001-000). Panel B on SV-02/SV-05 contains a key showing the colours used with the corresponding impact categories. The impacts presented are the greatest (i.e. worst-case) of the impacts predicted for daytime and night-time. | High Speed Two (HS2) Ltd | |
| Potential additional noise insulation (triggered by maximum sound levels at night) | This represents dwellings which would potentially be provided with noise insulation due maximum sound levels from the Proposed Scheme (further information regarding assessment criteria can be found in Volume 5 Appendix SV-001). | High Speed Two (HS2) Ltd | |
| Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target) | This represents dwellings which would potentially be provided with noise insulation due to noise from the Proposed Scheme exceeding the World Health Organization (WHO) night noise guidelines interim target (further information regarding assessment criteria can be found in Volume 5 Appendix SV-001). | High Speed Two (HS2) Ltd | |
| Potential noise insulation (triggered by Noise Insulation Regulations 1996) | This represents dwellings which would potentially qualify for noise insulation under the Noise Insulation (Railways and Other Guided Transport Systems) Regulations 1996 (further information regarding assessment criteria can be found in Volume 5 Appendix SV-001). | High Speed Two (HS2) Ltd | |
| Route in tunnel Route on surface | Represents the proposed route of HS2, split into route on surface and tunnelled sections. | High Speed Two (HS2) Ltd | |
| Sound contours (SV-01) | The sound levels from the Proposed Scheme (expressed as $L_{pAeq,T}$ and representing sound from the new railway only) are presented in 5dB steps. The levels are shown in the panel in the top-right hand corner of SV-01. | High Speed Two (HS2) Ltd | |
| Sound contours (SV-02/SV-05) | The sound levels from the Proposed Scheme (expressed as $L_{pAeq,T}$ and representing sound from the new railway only) are presented at two sound levels: 40 dB $L_{Aeq,T\ 23:00\ to\ 07:00}$ and 55 dB $L_{Aeq,T\ 23:00\ to\ 07:00}$. The corresponding daytime levels ($L_{Aeq,T\ 07:00\ to\ 23:00}$) are shown in Panel A of SV-02/SV-05. | High Speed Two (HS2) Ltd | |

LONDON-WEST MIDLANDS ENVIRONMENTAL STATEMENT

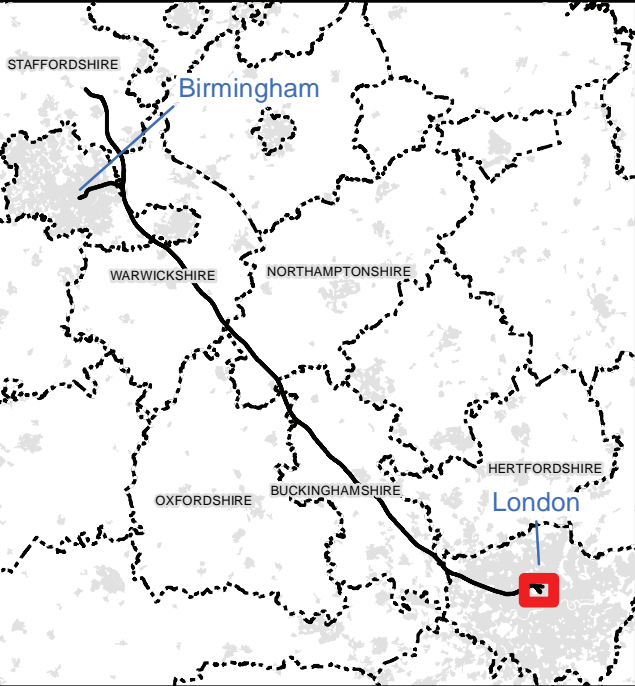
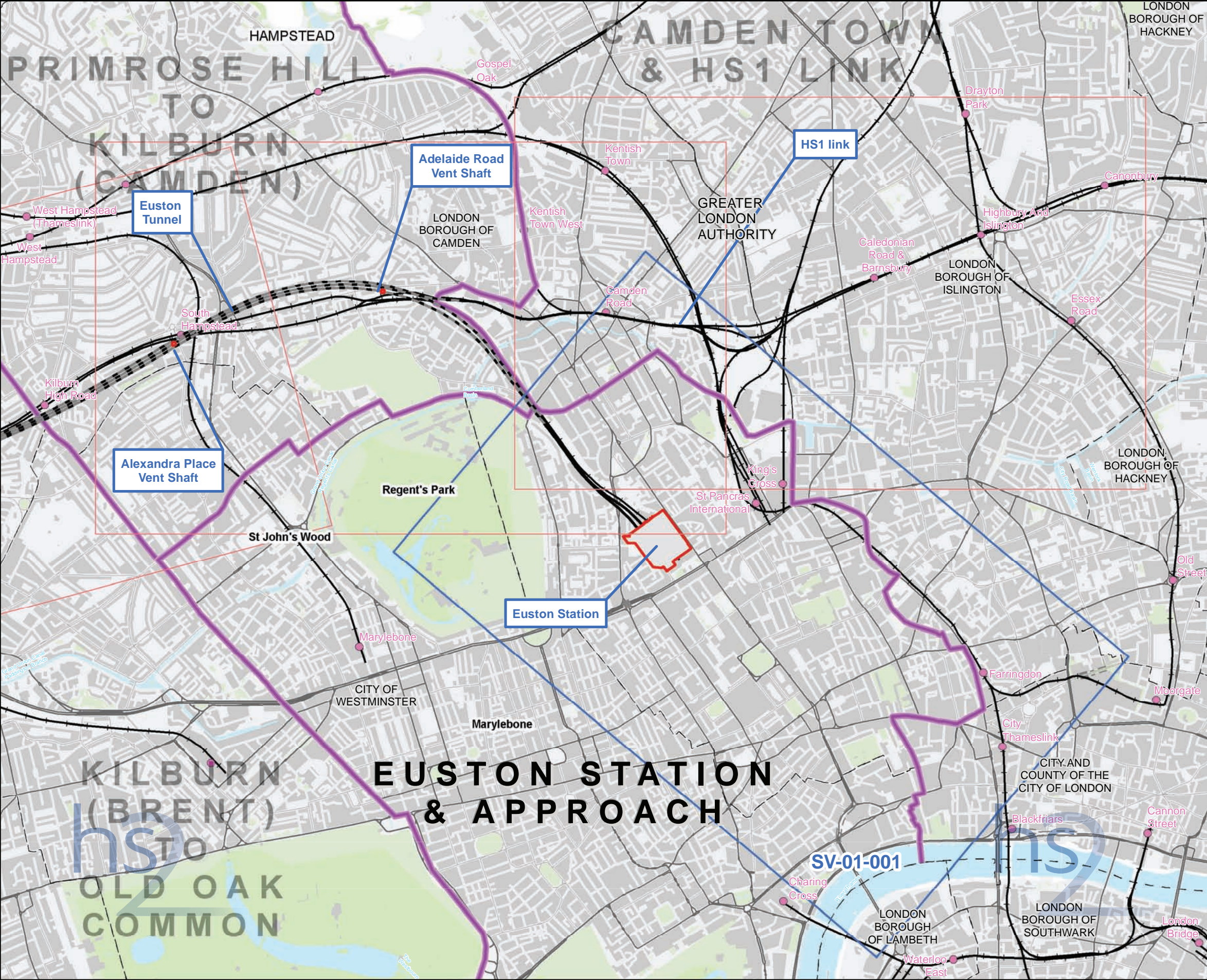
CFA1 | Euston - Station and Approach

SV-01 - Operational Sound Contour Maps and Likely Significant Effects

SV-02 - Operational Airborne Noise and Vibration Impacts and Likely Significant Effects
(with Assessment Locations)

SV-03 - Assessment and Monitoring Locations for Construction Sound, Noise & Vibration Assessments

SV-04 - Assessment and Monitoring Locations for Operational Sound, Noise & Vibration Assessments



Map Series Information:

SV-01 presents the predicted operational sound from the new railway.

The sound levels from the new railway (expressed as $L_{pAeq,T}$) are presented in typical noise mapping colours in 5 dB steps. There is a panel at the top right of the figure; the left-hand section of this panel contains a key communicating the night-time and daytime sound levels represented by the various colours. The right-hand part of the same panel contains text explaining how the sound levels presented on the figure inform the assessment of direct noise impacts and likely significant effects. A corresponding and similar panel is found on SV-02, along with the key sound contours that were used within the environmental assessment.

Also presented on SV-01 are the following (which are also included on SV-02):

- A representation of the Proposed Scheme, including the railway alignment (indicating whether it is on the surface or in tunnel), any new and altered roads and all associated engineering and environmental mitigation earthworks;
- blue and green lines representing the wayside airborne noise mitigation measures included in the Proposed Scheme;
- symbols representing buildings that would potentially qualify for noise insulation;
- labels identifying the residual likely significant noise effects of the Proposed Scheme, and
- the extent of the study area within which the direct impacts and effects of the scheme have been quantitatively assessed.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

Main Map Legend

Route in tunnel

Route on surface

Depot, station, headhouse or portal building

Community forum boundary

Existing railway station

County boundary

District/Borough boundary

Map sheets included in this community forum

Map sheets not included in this community forum

Map Number

SV-01-INDEX-CFA1

Map Name

Index Map of:
Operational Sound Contour Maps and
Likely Significant Effects

Community Forum Area CFA1:

Euston

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Scale at A3: 1:25,000

0

250

500

750

1,000

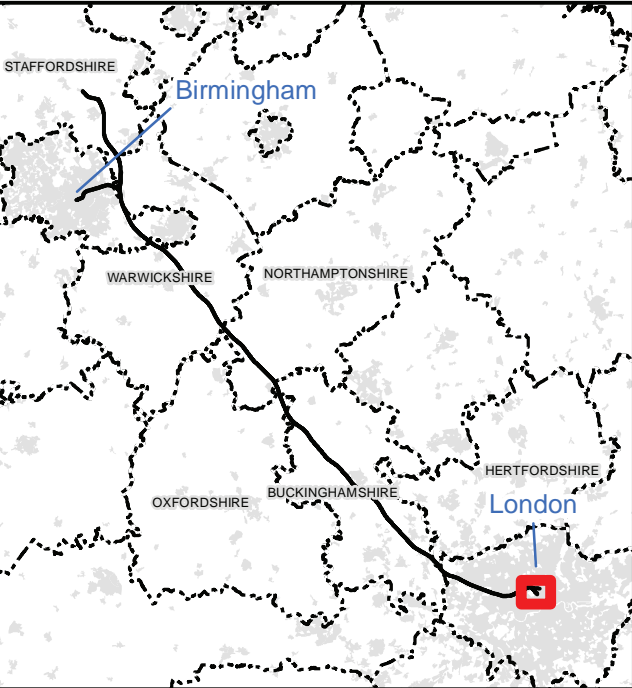
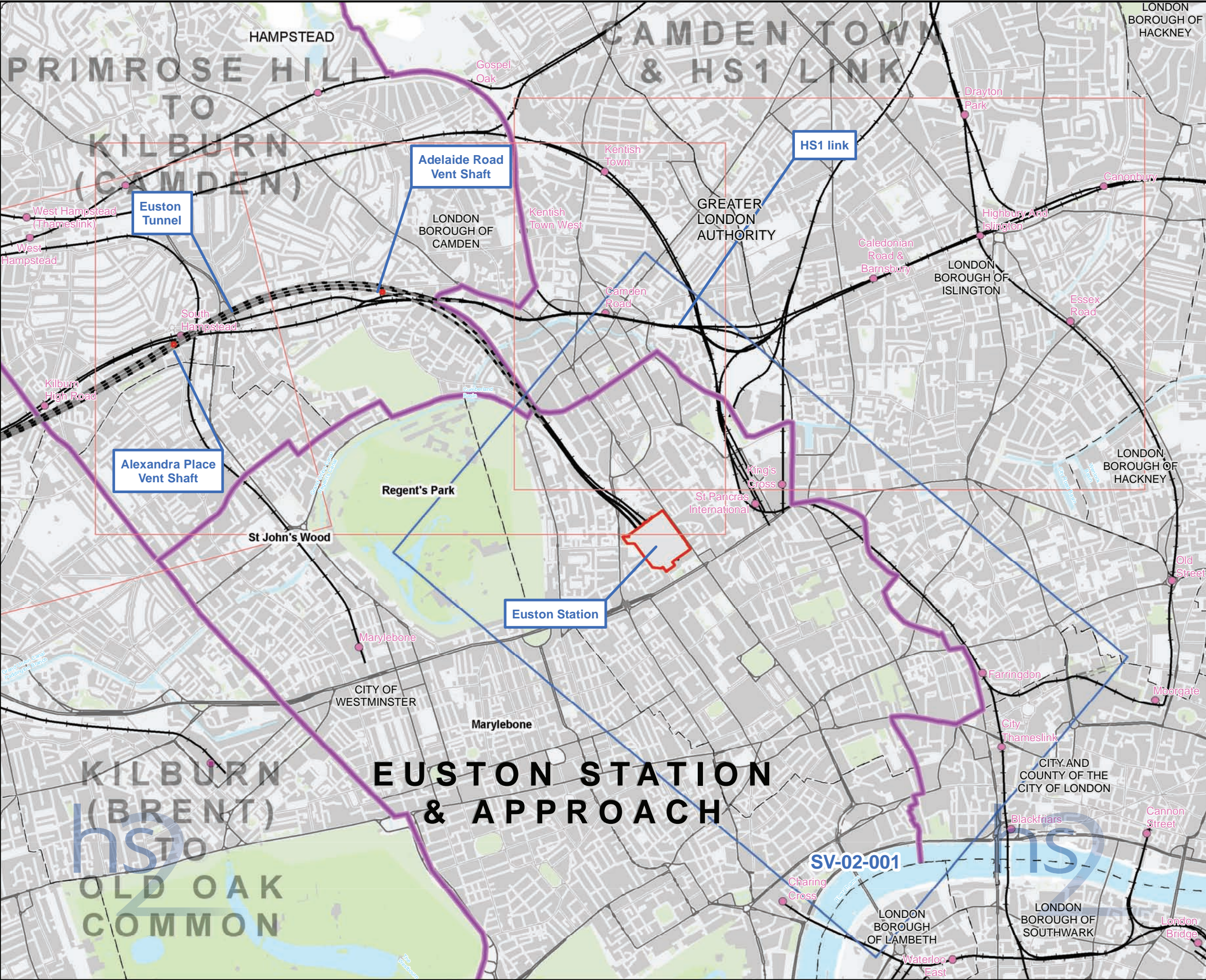
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Doc Number: C250-ARP-EV-MAP-000-004058--P04.00

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Date: 29/10/13



Map Series Information:

SV-02 presents the direct operational noise impacts and likely significant effects of the Proposed Scheme.

The SV-02 figure series necessarily contains a large amount of information relating to the operational noise and vibration assessment. It is designed to communicate visually the assessment process from the prediction of impacts to the determination of likely residual significant effects. The corresponding text is included in Vol2 and Vol5.

Key items on the map include the following:

- The Proposed Scheme (the proposed railway alignments and surrounding associated earthworks/roads);
- blue and green lines representing the wayside airborne noise mitigation measures included in the Proposed Scheme;
- the study areas, which indicate the areas within which direct sound and vibration impacts of the scheme have been quantitatively assessed;
- the calculated direct operational impacts of the scheme, displayed as colour-coded buildings and symbols representing buildings that would potentially qualify for noise insulation;
- sound contours representing sound produced by the new railway (displayed in a simpler manner than on SV-01 in order not to obscure other features on the map series);
- the assessment locations at which a quantitative prediction of sound and impacts have been carried out (representing a number of nearby buildings). These are labelled with a unique reference number to enable cross-reference to further detail regarding the assessments in Volume 5: Appendix SV-004; and
- labels indicating where the likely residual direct noise or vibration significant effects have been identified. These are labelled with a unique reference number to enable cross-reference to further detail regarding the assessments in Volume 5: Appendix SV-004.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

—

Route in tunnel

—

Route on surface

Depot, station, headhouse or portal building

—

Community forum boundary

●

Existing railway station

County boundary

District/Borough boundary

Map sheets included in this community forum

Map sheets not included in this community forum

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Map Number

SV-02-INDEX-CFA1

Map Name

Index Map of:
Operational Noise and Vibration Impacts and Likely
Significant Effects (with Assessment Locations)

Community Forum Area CFA1:

Euston

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Scale at A3: 1:25,000

0

250

500

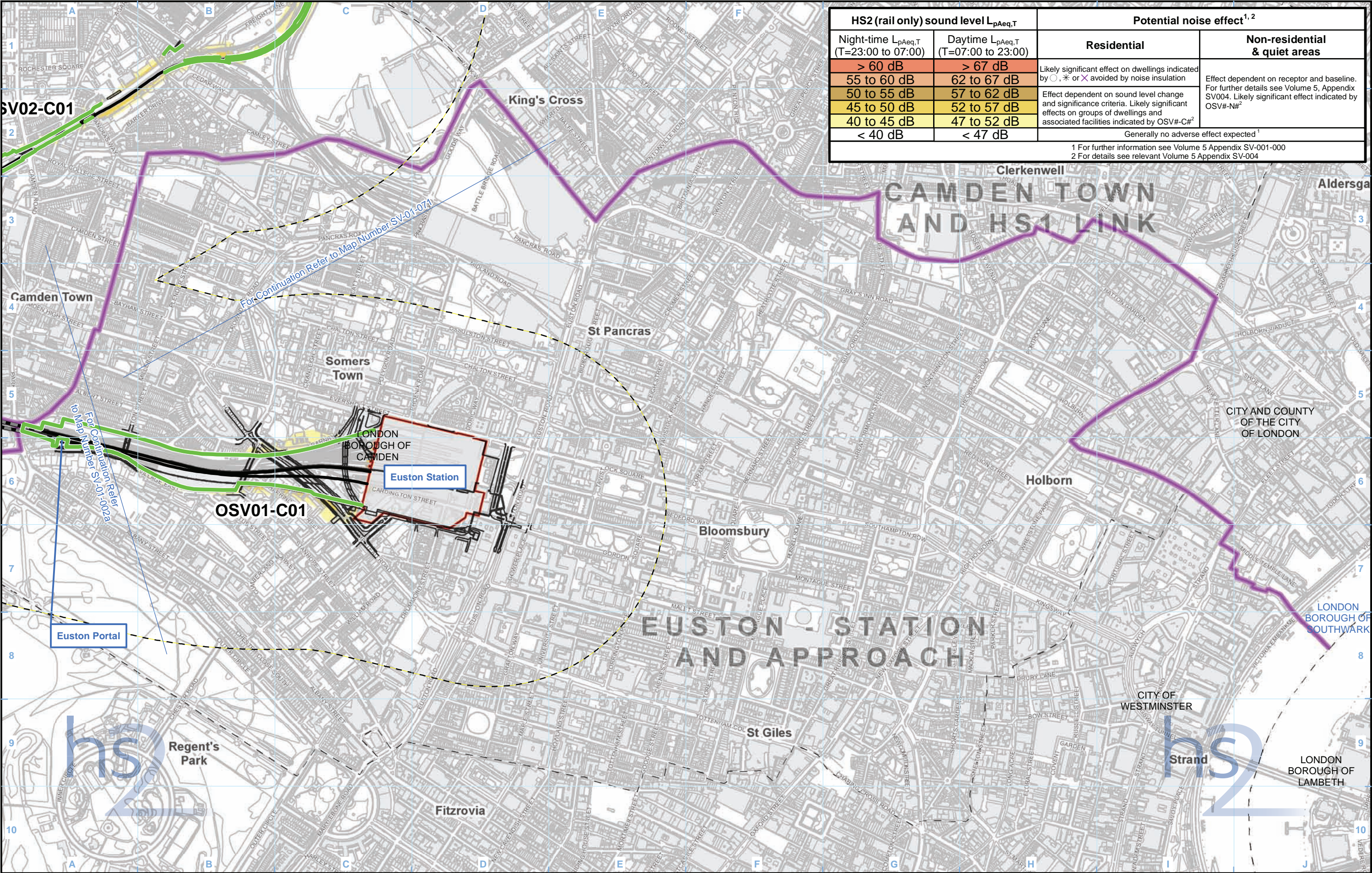
750

1,000

Metres

Doc Number: C250-ARP-EV-MAP-000-004083--P04.00

Date: 29/10/13



| HS2 (rail only) sound level $L_{pAeq,T}$ | | Potential noise effect ^{1, 2} | |
|------------------------------------------------------------|--------------------------------------------|-------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Night-time $L_{pAeq,T}$ (T=23:00 to 07:00) | Daytime $L_{pAeq,T}$ (T=07:00 to 23:00) | Residential | Non-residential & quiet areas |
| > 60 dB | > 67 dB | Likely significant effect on dwellings indicated by ○, ✱ or ✕ avoided by noise insulation | Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# ² |
| 55 to 60 dB | 62 to 67 dB | | |
| 50 to 55 dB | 57 to 62 dB | | |
| 45 to 50 dB | 52 to 57 dB | | |
| 40 to 45 dB | 47 to 52 dB | | |
| < 40 dB | < 47 dB | Generally no adverse effect expected ¹ | |
| 1 For further information see Volume 5 Appendix SV-001-000 | | | |
| 2 For details see relevant Volume 5 Appendix SV-004 | | | |

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

Legend - Sound related features

- Envisaged mitigation to avoid / reduce significant noise effects:
 - Landscaping and/or fence barriers*
 - Engineering e.g. cuttings (green tunnels separately marked)
- Envisaged measures further reducing noise effects:
 - Other environmental e.g. landscaping
 - Engineering e.g. cuttings

- Airborne sound study area
- Potential additional noise insulation (triggered by maximum sound levels at night)¹
- Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)¹
- Potential noise insulation (triggered by Noise Insulation Regulations 1996)¹

Map NumberSV-01-001

Map NameOperational Sound Contour Maps and Likely Significant Effects

Community Forum Area CFA01: Euston - Station and Approach

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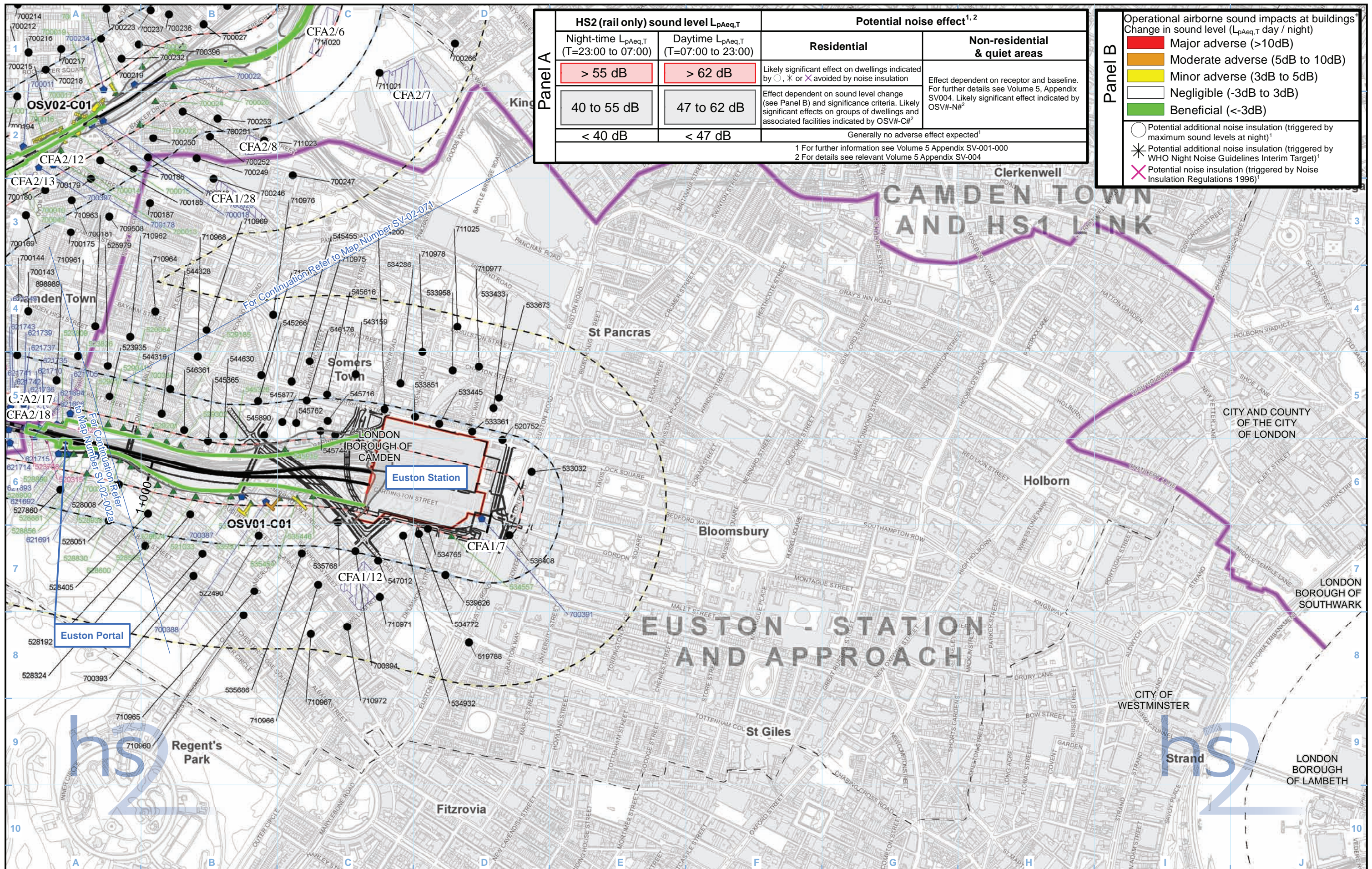
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Date: 29/10/13



| Panel A | HS2 (rail only) sound level $L_{pAeq,T}$ | | Potential noise effect ^{1,2} | |
|---------|-----------------------------------------------|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| | Night-time $L_{pAeq,T}$ (T=23:00 to 07:00) | Daytime $L_{pAeq,T}$ (T=07:00 to 23:00) | Residential | Non-residential & quiet areas |
| | > 55 dB | > 62 dB | Likely significant effect on dwellings indicated by ○, * or ✕ avoided by noise insulation | Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# |
| | 40 to 55 dB | 47 to 62 dB | Effect dependent on sound level change (see Panel B) and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C# | |
| | < 40 dB | < 47 dB | Generally no adverse effect expected ¹ | |

1 For further information see Volume 5 Appendix SV-001-000
2 For details see relevant Volume 5 Appendix SV-004

| Panel B | Operational airborne sound impacts at buildings ⁴ Change in sound level ($L_{pAeq,T}$ day / night) | |
|---------|-------------------------------------------------------------------------------------------------------------------|--|
| | Major adverse (>10dB) | |
| | Moderate adverse (5dB to 10dB) | |
| | Minor adverse (3dB to 5dB) | |
| | Negligible (-3dB to 3dB) | |

Beneficial (<-3dB)

○ Potential additional noise insulation (triggered by maximum sound levels at night)¹
✱ Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)¹
✕ Potential noise insulation (triggered by Noise Insulation Regulations 1996)¹

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Legend - Sound related features

- Ground-borne sound & vibration study area (residential and non-residential)
- Ground-borne sound & vibration study area (highly sensitive non-residential)
- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Minor ground-borne noise or vibration impact*

Legend - Engineering earthworks:

- Embankment
- Cutting

Legend - Non engineering earthworks:

- Embankment
- Cutting

* Residential buildings only
* Labelled with total barrier height above rail level

Legend - Sound related features

- Committed developments (labelled as CFA#/#)
- Envisaged mitigation to avoid / reduce significant noise effects:
 - Landscaping and/or fence barriers*
 - Engineering e.g. cuttings (green tunnels separately marked)
 - Envisaged measures further reducing noise effects:
 - Other environmental features e.g. landscaping
 - Engineering e.g. cuttings
 - Airborne sound study area

Map Number: SV-02-001

Map Name: Operational Noise and Vibration Impacts and Likely Significant Effects (with Assessment Locations)

Community Forum Area CFA01: Euston - Station and Approach

hs2

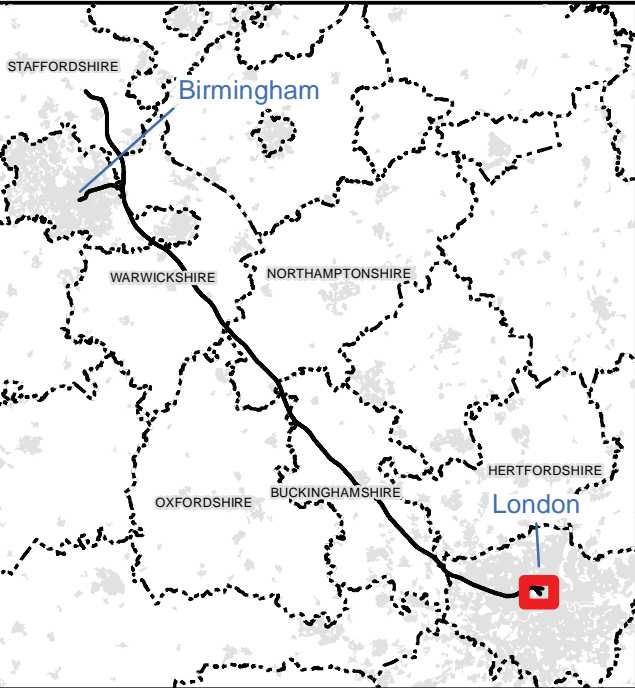
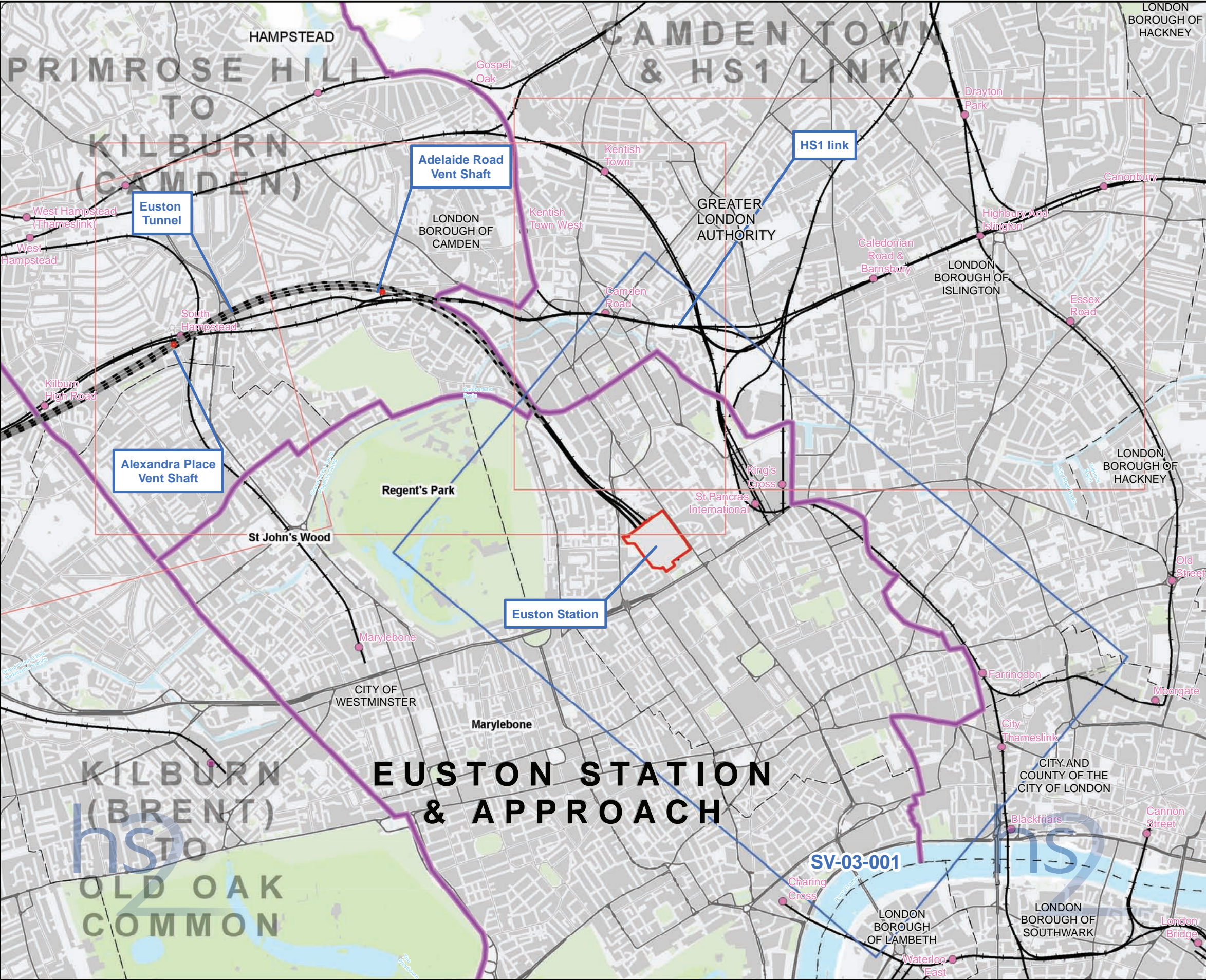
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0 100 200 300 400 Metres

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Date: 29/10/13



Map Series Information:

The SV-03 figure series accompanies the construction noise & vibration assessments. It shows the locations at which a quantitative assessment of the direct effects of construction noise and/or vibration has been carried out. These are labelled as assessment locations with a reference number to enable cross-reference to the construction noise and vibration reports contained in Volume 5: Appendix SV-003 and Volume 5: Appendix SV-002.

The figure series also shows locations at which baseline sound measurements were carried out. These baseline measurement locations are labelled with a reference number to enable cross-reference to the baseline sound reports contained in Volume 5: Appendix SV-002.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

Main Map Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- Existing railway station
- County boundary
- District/Borough boundary

- Map sheets included in this community forum
- Map sheets not included in this community forum

Map Number

SV-03-INDEX-CFA1

Map Name

Index Map of:
Assessment and Monitoring Locations for
Construction Sound, Noise & Vibration Assessments

Community Forum Area CFA1:
Euston

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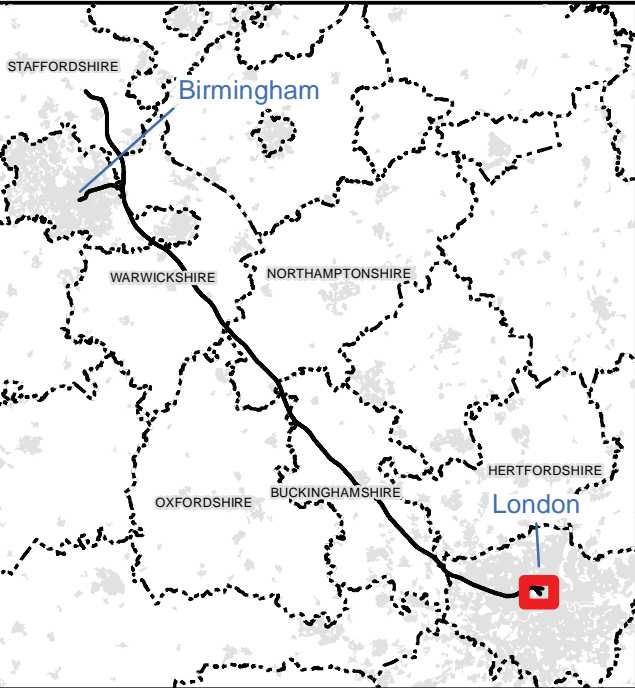
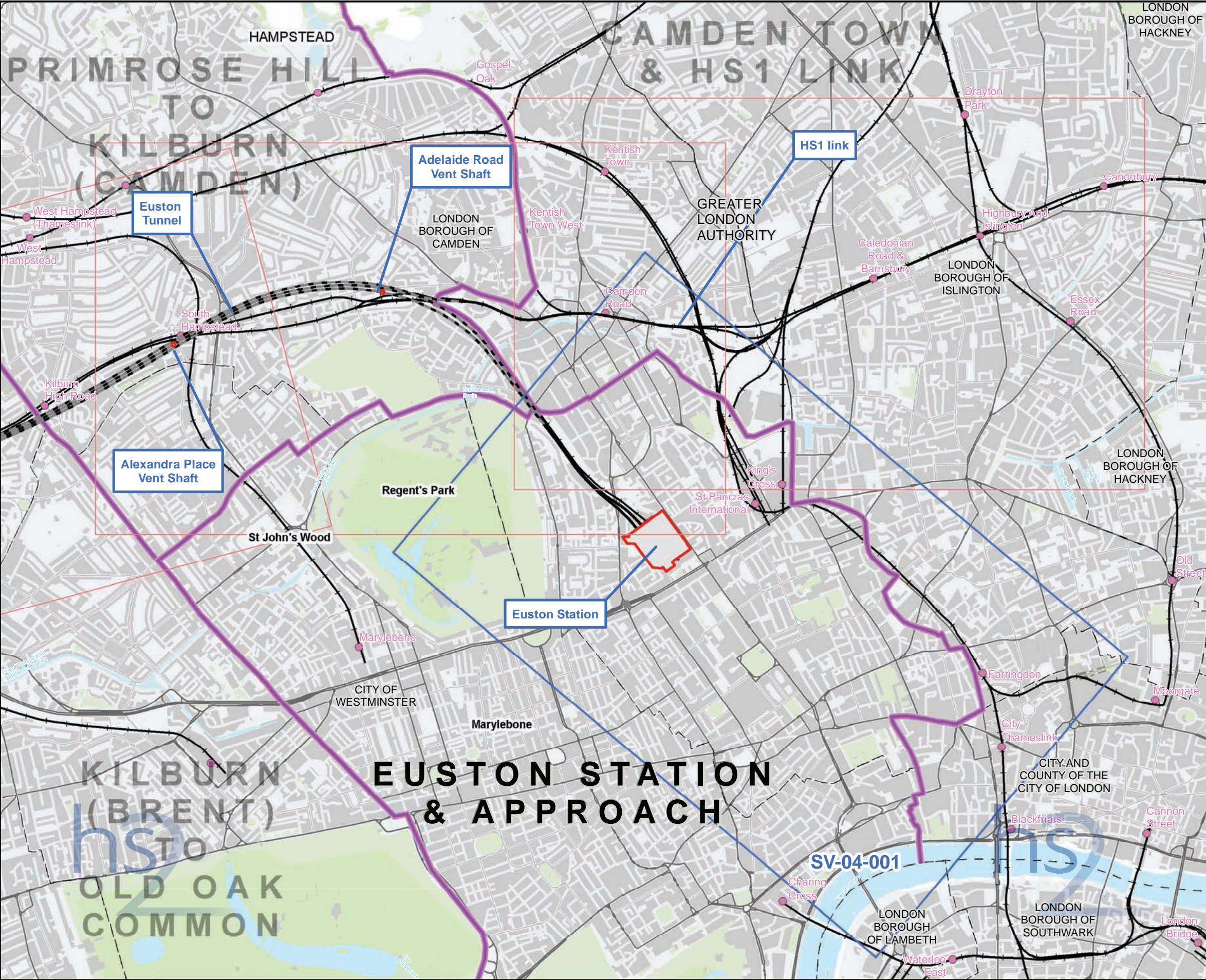
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Map Series Information:

The SV-04 figure series shows the locations at which a quantitative assessment of the direct effects of operational sound and/or vibration has been carried out. These are labelled as assessment locations with a reference number to enable cross-reference to the operational sound and vibration reports contained in Volume 5: Appendix SV-004 and Volume 5: Appendix SV-002.

The figure series also shows locations at which baseline sound measurements were carried out. These baseline measurement locations are labelled with a reference number to enable cross-reference to the baseline sound reports contained in Volume 5: Appendix SV-002.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

Main Map Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- Existing railway station
- County boundary
- District/Borough boundary

- Map sheets included in this community forum
- Map sheets not included in this community forum

Map Number: SV-04-INDEX-CFA1

Map Name: Index Map of:
Assessment and Monitoring Locations for
Operational Sound, Noise & Vibration Assessments

Community Forum Area CFA1:
Euston

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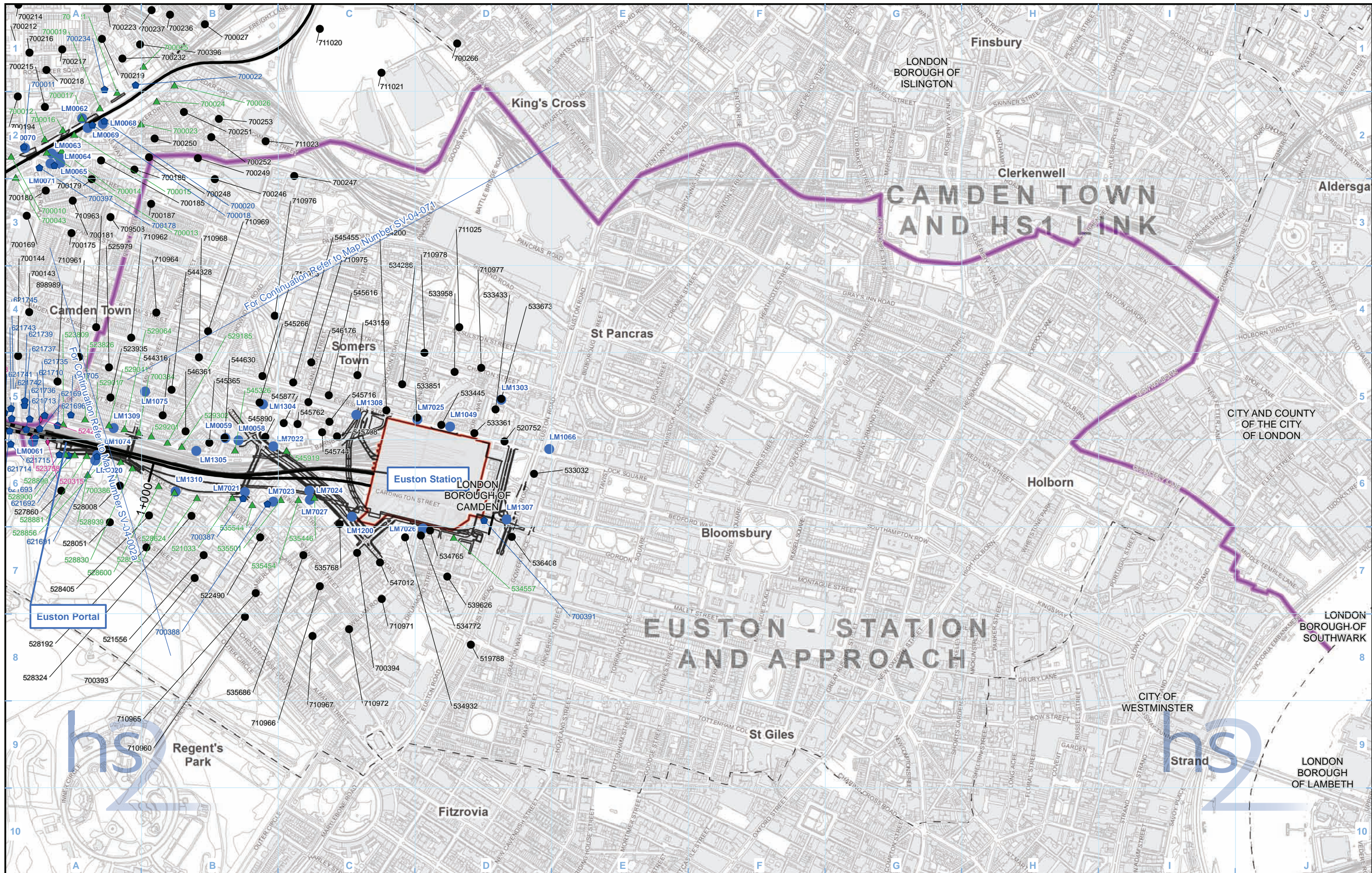
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Date: 29/10/13



Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

Legend - Sound related features

- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Baseline measurement locations

labelled with Assessment Location ID reference number
(for details of the assessment results see Vol 5 Appendix SV004)

(labelled with Measurement Location reference code)

Map Number SV-04-001

Map Name
Assessment and Monitoring Locations for
Operational Sound, Noise & Vibration
Assessments

Community Forum Area CFA01:
Euston Station and Approach

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Date: 29/10/13

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LONDON-WEST MIDLANDS ENVIRONMENTAL STATEMENT

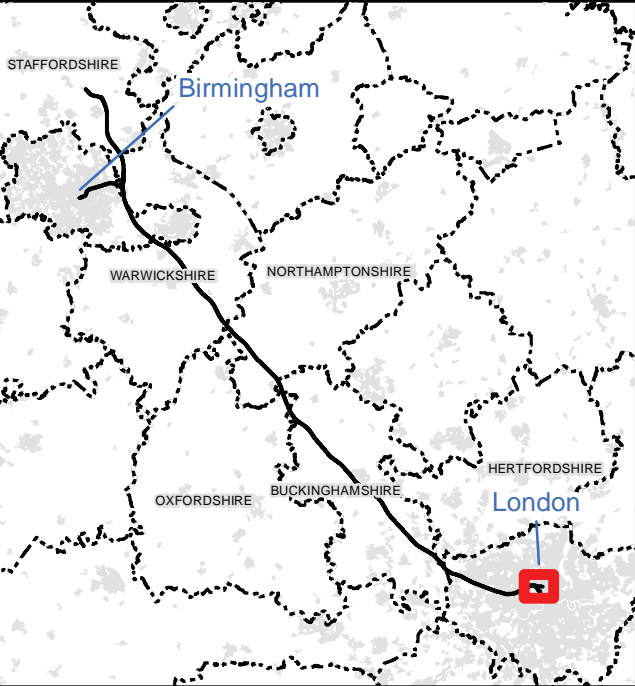
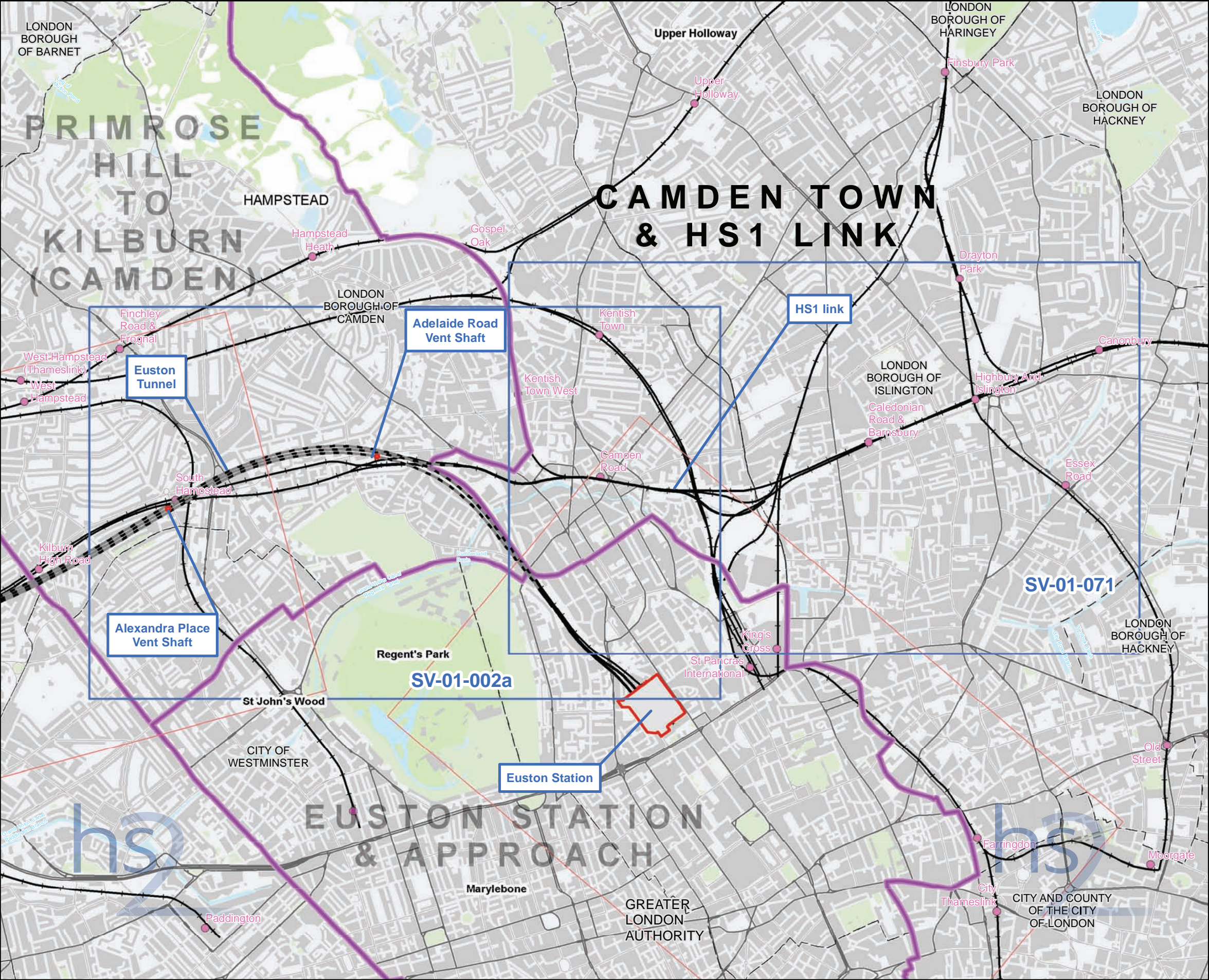
CFA2 | Camden Town and HS1 Link

SV-01 - Operational Sound Contour Maps and Likely Significant Effects

SV-02 - Operational Airborne Noise and Vibration Impacts and Likely Significant Effects
(with Assessment Locations)

SV-03 - Assessment and Monitoring Locations for Construction Sound, Noise & Vibration Assessments

SV-04 - Assessment and Monitoring Locations for Operational Sound, Noise & Vibration Assessments



Map Series Information:

SV-01 presents the predicted operational sound from the new railway.

The sound levels from the new railway (expressed as $L_{pAeq,T}$) are presented in typical noise mapping colours in 5 dB steps. There is a panel at the top right of the figure; the left-hand section of this panel contains a key communicating the night-time and daytime sound levels represented by the various colours. The right-hand part of the same panel contains text explaining how the sound levels presented on the figure inform the assessment of direct noise impacts and likely significant effects. A corresponding and similar panel is found on SV-02, along with the key sound contours that were used within the environmental assessment.

Also presented on SV-01 are the following (which are also included on SV-02):

- A representation of the Proposed Scheme, including the railway alignment (indicating whether it is on the surface or in tunnel), any new and altered roads and all associated engineering and environmental mitigation earthworks;
- blue and green lines representing the wayside airborne noise mitigation measures included in the Proposed Scheme;
- symbols representing buildings that would potentially qualify for noise insulation;
- labels identifying the residual likely significant noise effects of the Proposed Scheme, and
- the extent of the study area within which the direct impacts and effects of the scheme have been quantitatively assessed.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

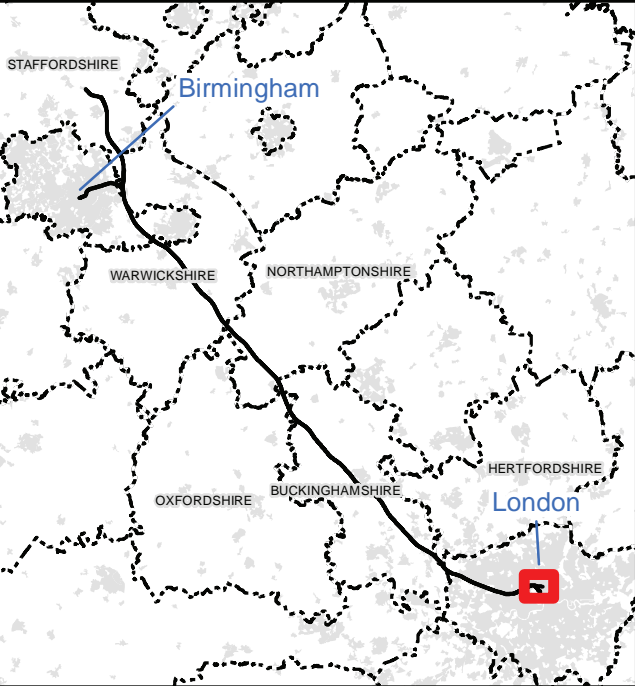
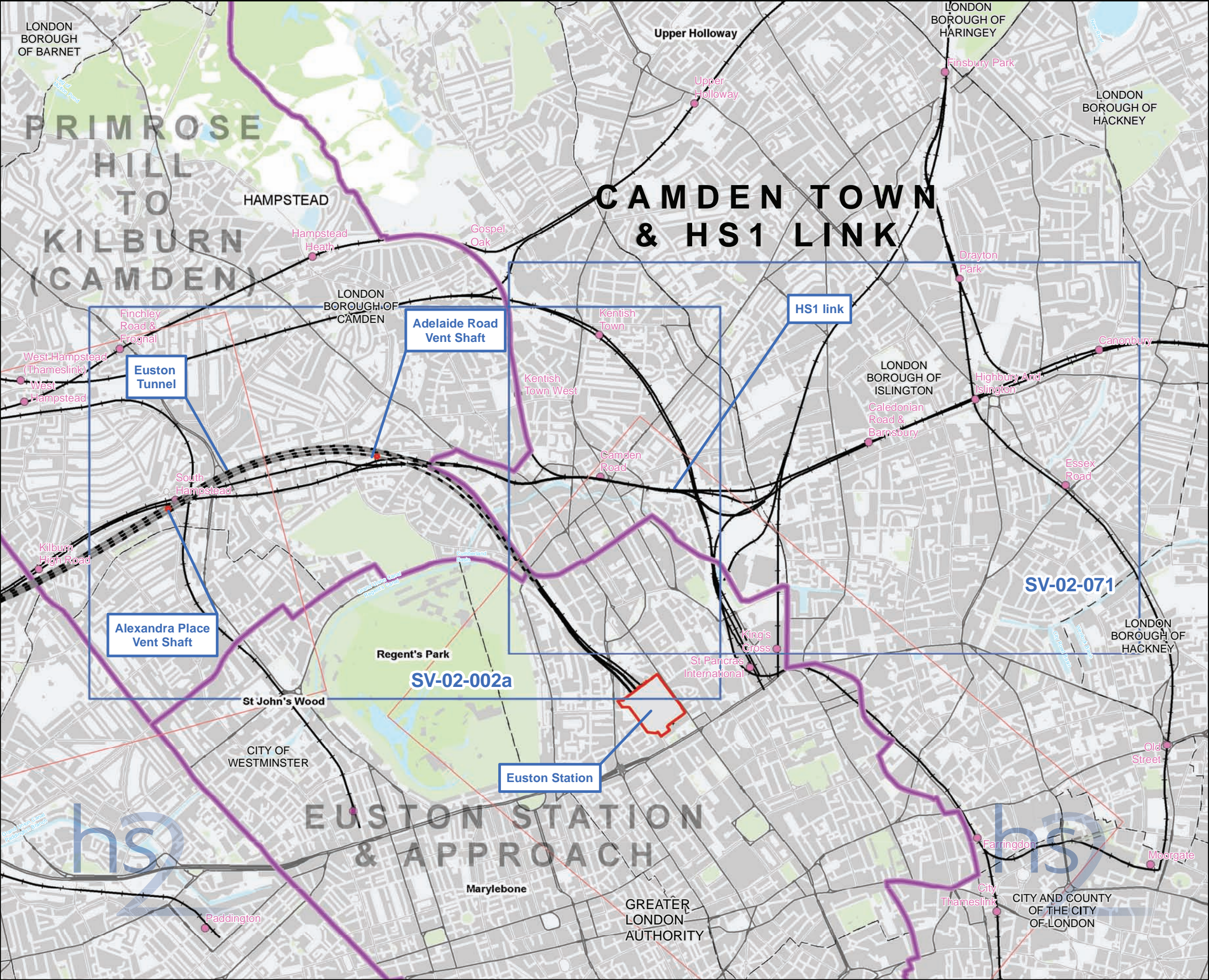
Note: Not all data layers in the legend are represented on every map.

Main Map Legend

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| | |
|------------|-----------------------------------------------------------------------------------|
| Map Number | SV-01-INDEX-CFA2 |
| Map Name | Index Map of: Operational Sound Contour Maps and Likely Significant Effects |
| | Community Forum Area CFA2: Camden Town & HS1 Link |

| | | |
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Map Series Information:

SV-02 presents the direct operational noise impacts and likely significant effects of the Proposed Scheme.

The SV-02 figure series necessarily contains a large amount of information relating to the operational noise and vibration assessment. It is designed to communicate visually the assessment process from the prediction of impacts to the determination of likely residual significant effects. The corresponding text is included in Vol2 and Vol5.

Key items on the map include the following:

- The Proposed Scheme (the proposed railway alignments and surrounding associated earthworks/roads);
- blue and green lines representing the wayside airborne noise mitigation measures included in the Proposed Scheme;
- the study areas, which indicate the areas within which direct sound and vibration impacts of the scheme have been quantitatively assessed;
- the calculated direct operational impacts of the scheme, displayed as colour-coded buildings and symbols representing buildings that would potentially qualify for noise insulation;
- sound contours representing sound produced by the new railway (displayed in a simpler manner than on SV-01 in order not to obscure other features on the map series);
- the assessment locations at which a quantitative prediction of sound and impacts have been carried out (representing a number of nearby buildings). These are labelled with a unique reference number to enable cross-reference to further detail regarding the assessments in Volume 5: Appendix SV-004; and
- labels indicating where the likely residual direct noise or vibration significant effects have been identified. These are labelled with a unique reference number to enable cross-reference to further detail regarding the assessments in Volume 5: Appendix SV-004.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

Route in tunnel

Route on surface

Depot, station, headhouse or portal building

Community forum boundary

Existing railway station

County boundary

District/Borough boundary

Map sheets included in this community forum

Map sheets not included in this community forum

Map Number

SV-02-INDEX-CFA2

Map Name

Index Map of:
Operational Noise and Vibration Impacts and Likely Significant Effects (with Assessment Locations)

Community Forum Area CFA2:

Camden Town & HS1 Link

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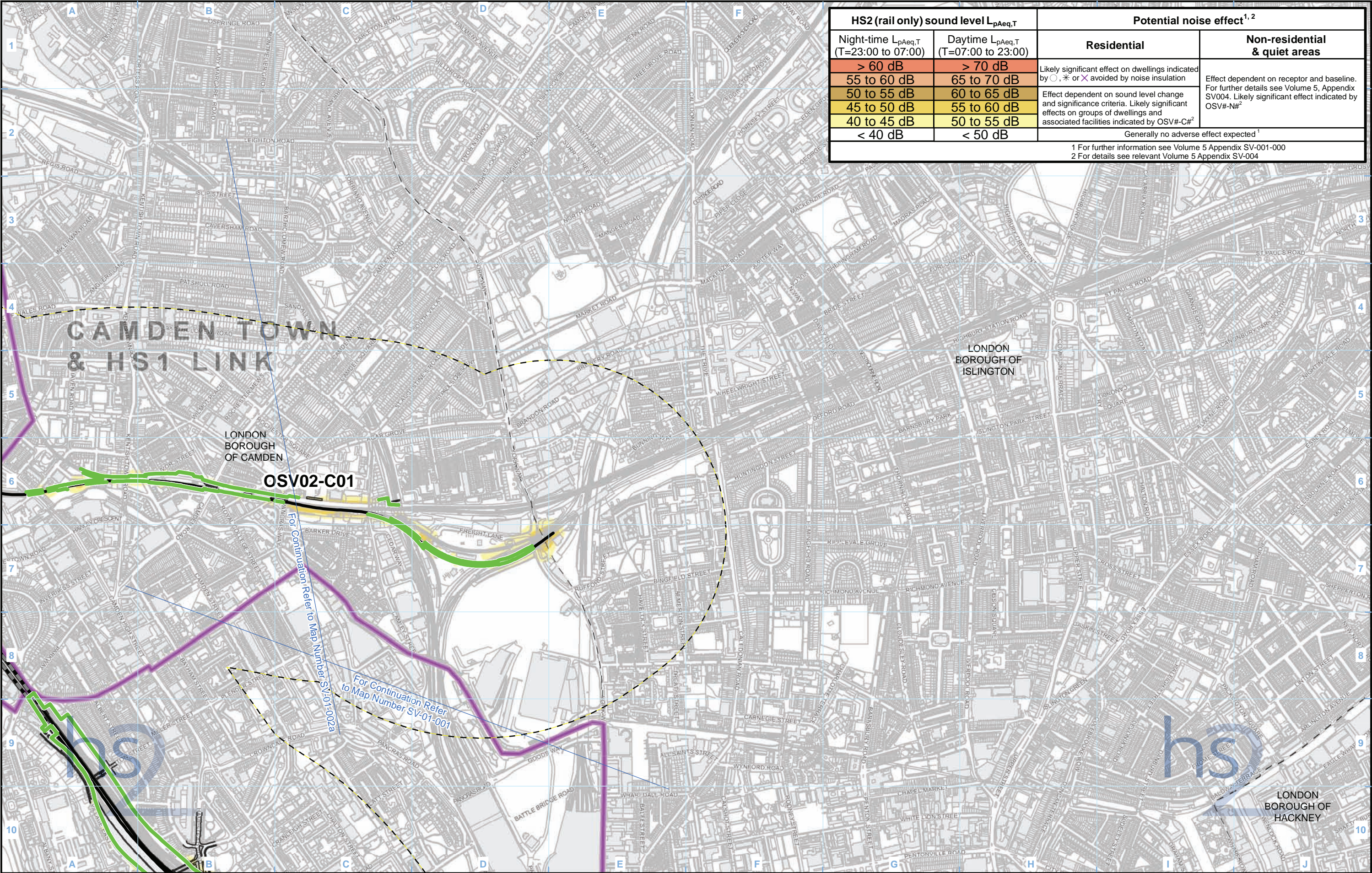
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750

1,000

Metres

Date: 29/10/13



| HS2 (rail only) sound level $L_{pAeq,T}$ | | Potential noise effect ^{1, 2} | |
|------------------------------------------------------------|--------------------------------------------|-------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Night-time $L_{pAeq,T}$ (T=23:00 to 07:00) | Daytime $L_{pAeq,T}$ (T=07:00 to 23:00) | Residential | Non-residential & quiet areas |
| > 60 dB | > 70 dB | Likely significant effect on dwellings indicated by ○, ✱ or ✕ avoided by noise insulation | Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# ² |
| 55 to 60 dB | 65 to 70 dB | | |
| 50 to 55 dB | 60 to 65 dB | | |
| 45 to 50 dB | 55 to 60 dB | | |
| 40 to 45 dB | 50 to 55 dB | | |
| < 40 dB | < 50 dB | Generally no adverse effect expected ¹ | |
| 1 For further information see Volume 5 Appendix SV-001-000 | | | |
| 2 For details see relevant Volume 5 Appendix SV-004 | | | |

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

Legend - Sound related features

- Envisaged mitigation to avoid / reduce significant noise effects:
 - Landscaping and/or fence barriers*
 - Engineering e.g. cuttings (green tunnels separately marked)
- Envisaged measures further reducing noise effects:
 - Other environmental e.g. landscaping
 - Engineering e.g. cuttings

Airborne sound study area

- Potential additional noise insulation (triggered by maximum sound levels at night)¹
- Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)¹
- Potential noise insulation (triggered by Noise Insulation Regulations 1996)¹

* Labelled with total barrier height above rail level

Map Number

SV-01-071

Map Name

Operational Sound Contour Maps and Likely Significant Effects

Community Forum Area CFA02:

Camden Town & HS1 Link

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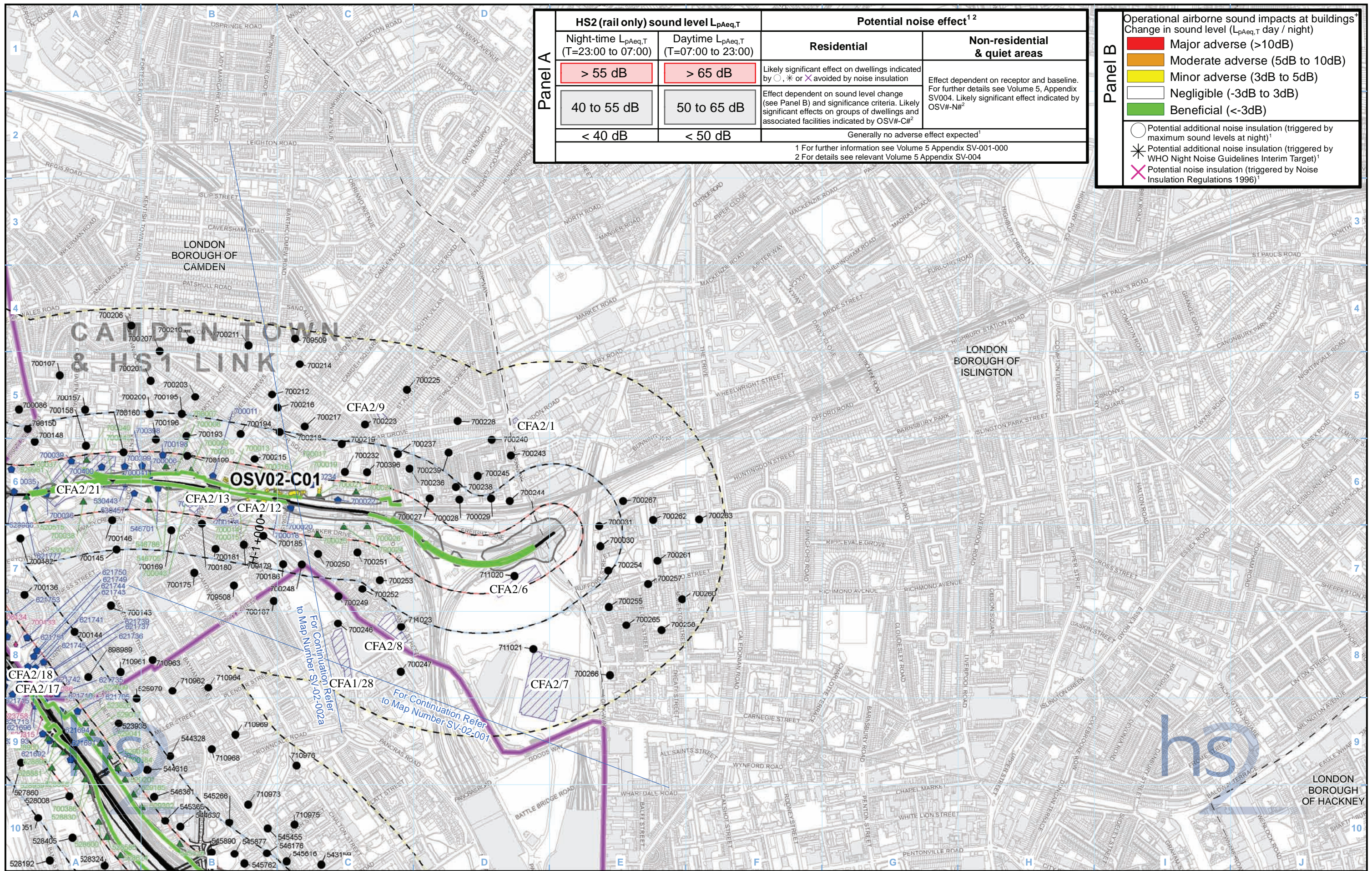
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Doc Number: C250-ARP-EV-MAP-000-003551

Date: 29/10/13



| Panel A | HS2 (rail only) sound level L _{pAeq,T} | | Potential noise effect ^{1 2} | |
|-----------------------------------------------------|------------------------------------------------------------|---------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| | Night-time L _{pAeq,T} (T=23:00 to 07:00) | Daytime L _{pAeq,T} (T=07:00 to 23:00) | Residential | Non-residential & quiet areas |
| | > 55 dB | > 65 dB | Likely significant effect on dwellings indicated by ○, * or ✕ avoided by noise insulation | Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# ² |
| | 40 to 55 dB | 50 to 65 dB | Effect dependent on sound level change (see Panel B) and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C# ² | |
| | < 40 dB | < 50 dB | Generally no adverse effect expected ¹ | |
| | 1 For further information see Volume 5 Appendix SV-001-000 | | | |
| 2 For details see relevant Volume 5 Appendix SV-004 | | | | |

Panel B

Operational airborne sound impacts at buildings*
Change in sound level (L_{pAeq,T} day / night)

Major adverse (>10dB)

Moderate adverse (5dB to 10dB)

Minor adverse (3dB to 5dB)

Negligible (-3dB to 3dB)

Beneficial (<-3dB)

○

Potential additional noise insulation (triggered by maximum sound levels at night)¹

✱

Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)¹

✕

Potential noise insulation (triggered by Noise Insulation Regulations 1996)¹

Legend - General features

Route in bored tunnel

Route in green tunnel

Route on surface

Depot, station, headhouse or portal building

Community forum boundary

District/Borough boundary

County boundary

Engineering earthworks:

Embankment

Cutting

Non engineering earthworks:

Embankment

Cutting

Legend - Sound related features

Committed developments (label as CFA#/#)

Envisaged mitigation to avoid / reduce significant noise effects:

Landscaping and/or fence barriers*

Envisaged measures further reducing noise effects:

Other environmental features e.g. landscaping

Engineering e.g. cuttings (green tunnels separately marked)

Engineering e.g. cuttings

Airborne sound study area

Ground-borne sound & vibration study area (residential and non-residential)

Ground-borne sound & vibration study area (highly sensitive non-residential)

Airborne sound assessment location

Airborne sound and vibration assessment location

Ground-borne sound and/or vibration assessment location

Airborne sound, ground-borne sound and vibration assessment location

Minor ground-borne noise or vibration impact*

Map Number
SV-02-071

Map Name
Operational Noise and Vibration Impacts and Likely Significant Effects (with Assessment Locations)

Community Forum Area CFA02:
Camden Town & HS1 Link

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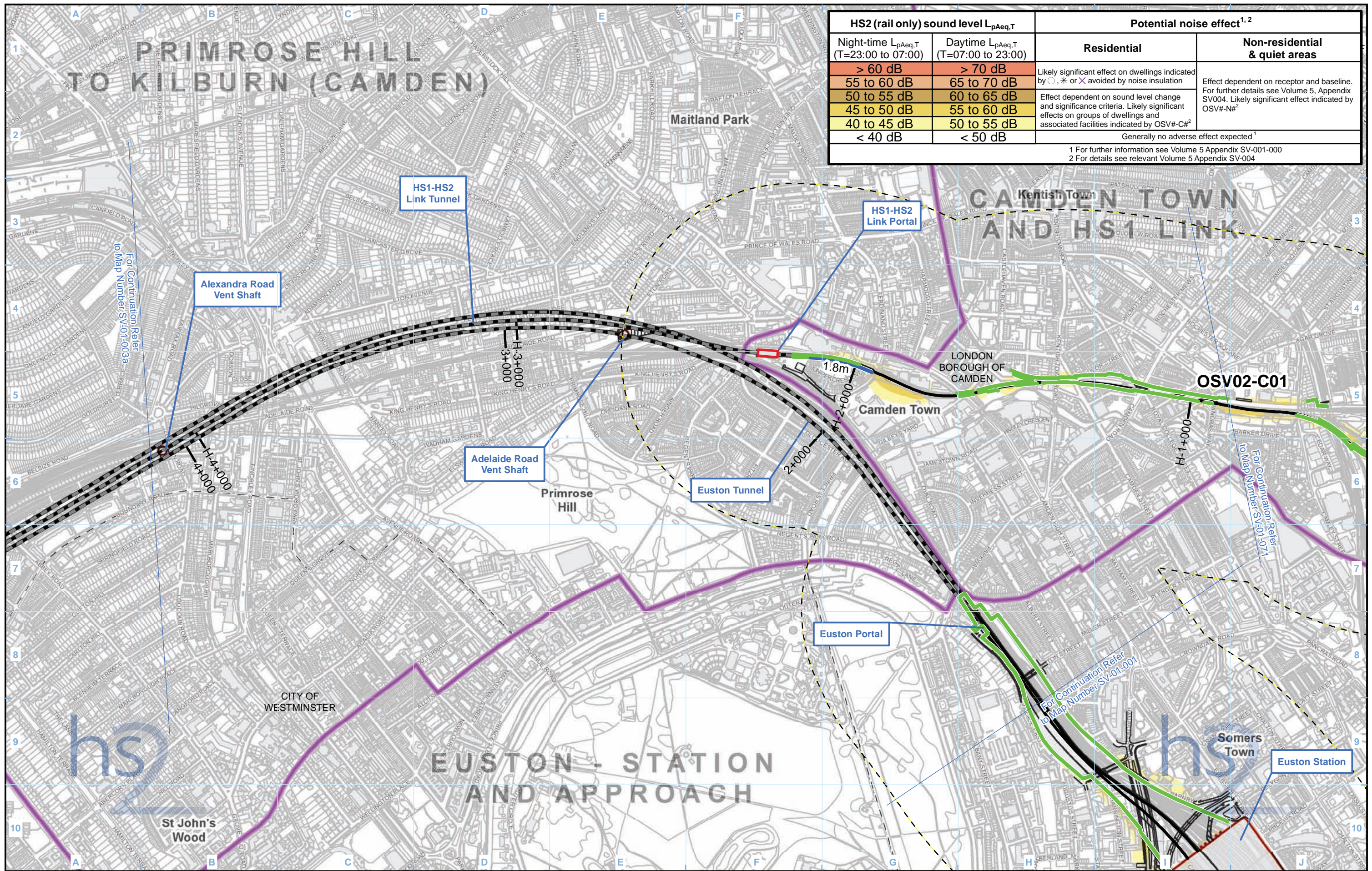
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Date: 31/10/13



| HS2 (rail only) sound level $L_{pAeq,T}$ | | Potential noise effect ^{1, 2} | |
|------------------------------------------------------------|--------------------------------------------|-------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Night-time $L_{pAeq,T}$ (T=23:00 to 07:00) | Daytime $L_{pAeq,T}$ (T=07:00 to 23:00) | Residential | Non-residential & quiet areas |
| > 60 dB | > 70 dB | Likely significant effect on dwellings indicated by ○, ✱ or ✕ avoided by noise insulation | Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# ² |
| 55 to 60 dB | 65 to 70 dB | | |
| 50 to 55 dB | 60 to 65 dB | | |
| 45 to 50 dB | 55 to 60 dB | | |
| 40 to 45 dB | 50 to 55 dB | | |
| < 40 dB | < 50 dB | Generally no adverse effect expected ¹ | |
| 1 For further information see Volume 5 Appendix SV-001-000 | | | |
| 2 For details see relevant Volume 5 Appendix SV-004 | | | |

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

Legend - Sound related features

- Envisaged mitigation to avoid / reduce significant noise effects:
 - Landscaping and/or fence barriers*
 - Engineering e.g. cuttings (green tunnels separately marked)
- Envisaged measures further reducing noise effects:
 - Other environmental e.g. landscaping
 - Engineering e.g. cuttings

- Airborne sound study area
- Potential additional noise insulation (triggered by maximum sound levels at night)¹
- Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)¹
- Potential noise insulation (triggered by Noise Insulation Regulations 1996)¹

* Labelled with total barrier height above rail level

Map Number
SV-01-002a

Map Name
Operational Sound Contour Maps and Likely Significant Effects

Community Forum Area CFA02:
Camden Town & HS1 Link

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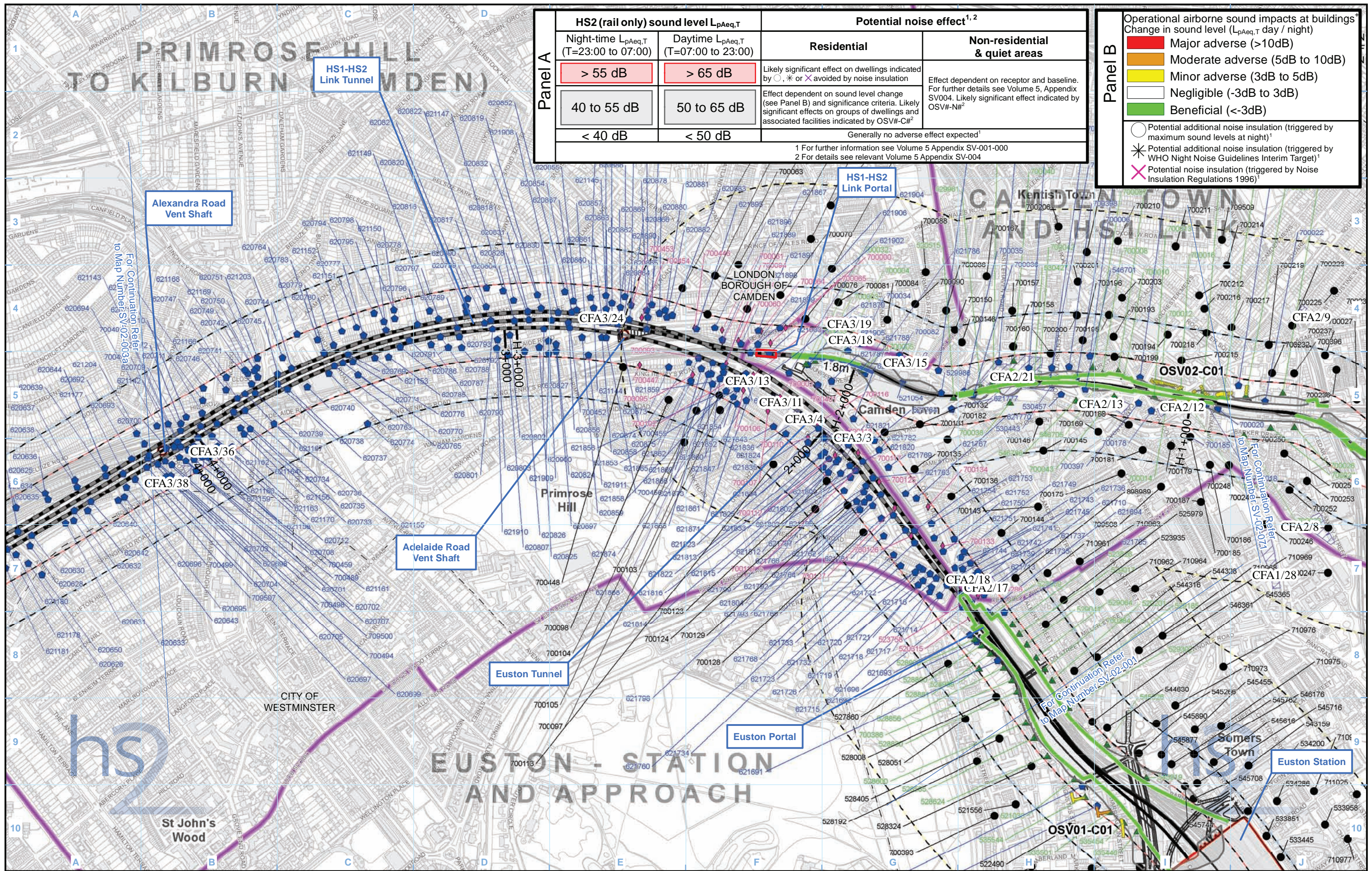
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Date: 29/10/13



| Panel A | HS2 (rail only) sound level $L_{pAeq,T}$ | | Potential noise effect ^{1,2} | |
|---------|-----------------------------------------------|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| | Night-time $L_{pAeq,T}$ (T=23:00 to 07:00) | Daytime $L_{pAeq,T}$ (T=07:00 to 23:00) | Residential | Non-residential & quiet areas |
| | > 55 dB | > 65 dB | Likely significant effect on dwellings indicated by ○, * or ✕ avoided by noise insulation | Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# |
| | 40 to 55 dB | 50 to 65 dB | Effect dependent on sound level change (see Panel B) and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C# | |
| | < 40 dB | < 50 dB | Generally no adverse effect expected ¹ | |

1 For further information see Volume 5 Appendix SV-001-000
2 For details see relevant Volume 5 Appendix SV-004

| Panel B | Operational airborne sound impacts at buildings ⁴ Change in sound level ($L_{pAeq,T}$ day / night) | |
|---------|-------------------------------------------------------------------------------------------------------------------|--|
| | Major adverse (>10dB) | |
| | Moderate adverse (5dB to 10dB) | |
| | Minor adverse (3dB to 5dB) | |
| | Negligible (-3dB to 3dB) | |
| | Beneficial (<-3dB) | |
| ○ | Potential additional noise insulation (triggered by maximum sound levels at night) ¹ | |
| * | Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target) ¹ | |
| ✕ | Potential noise insulation (triggered by Noise Insulation Regulations 1996) ¹ | |

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

Legend - Sound related features

- Committed developments (labelled as CFA#/#)
- Envisaged mitigation to avoid / reduce significant noise effects:
 - Landscaping and/or fence barriers*
 - Engineering e.g. cuttings (green tunnels separately marked)
 - Envisaged measures further reducing noise effects:
 - Other environmental features e.g. landscaping
 - Engineering e.g. cuttings
- Airborne sound study area

- Ground-borne sound & vibration study area (residential and non-residential)
- Ground-borne sound & vibration study area (highly sensitive non-residential)
- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Minor ground-borne noise or vibration impact*

Map Number: SV-02-002a

Map Name: Operational Noise and Vibration Impacts and Likely Significant Effects (with Assessment Locations)

Community Forum Area CFA02: Camden Town & HS1 Link

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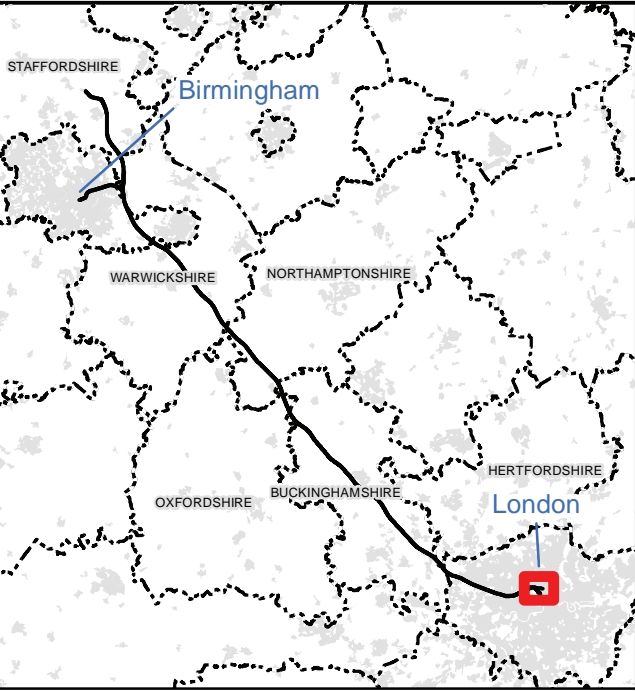
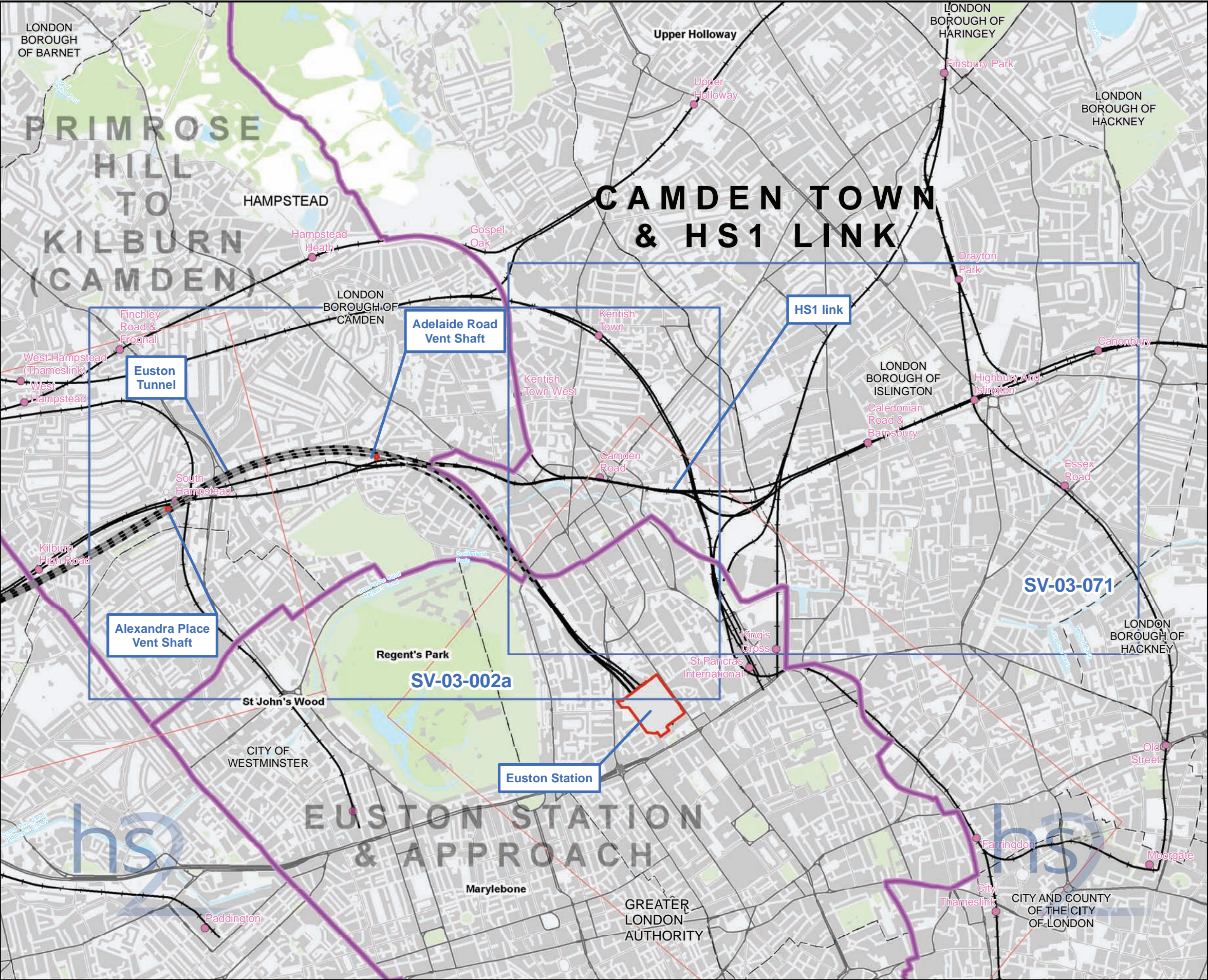
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Date: 29/10/13

Scale at A3: 1:10,000

Metres



Map Series Information:

The SV-03 figure series accompanies the construction noise & vibration assessments. It shows the locations at which a quantitative assessment of the direct effects of construction noise and/or vibration has been carried out. These are labelled as assessment locations with a reference number to enable cross-reference to the construction noise and vibration reports contained in Volume 5: Appendix SV-003 and Volume 5: Appendix SV-002.

The figure series also shows locations at which baseline sound measurements were carried out. These baseline measurement locations are labelled with a reference number to enable cross-reference to the baseline sound reports contained in Volume 5: Appendix SV-002.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

Main Map Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- Existing railway station
- County boundary
- District/Borough boundary

- Map sheets included in this community forum
- Map sheets not included in this community forum

Map Number: SV-03-INDEX-CFA2

Map Name: Index Map of:
Assessment and Monitoring Locations for
Construction Sound, Noise & Vibration Assessments

Community Forum Area CFA2:
Camden Town & HS1 Link

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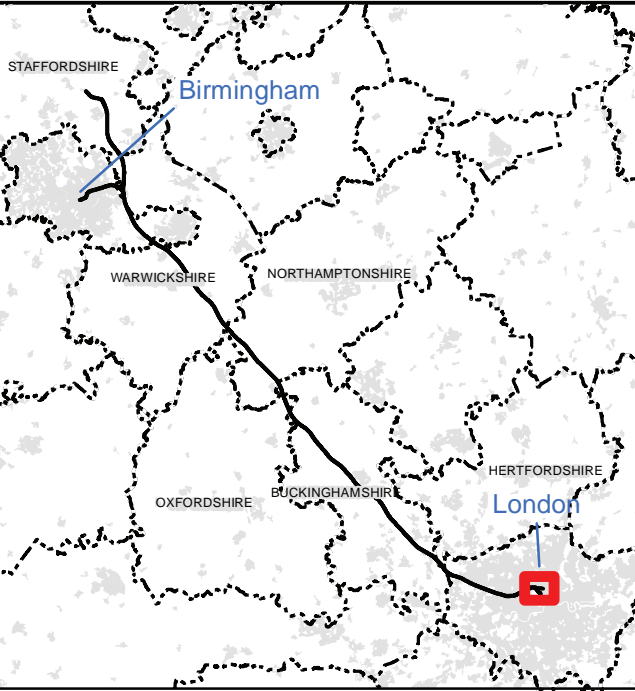
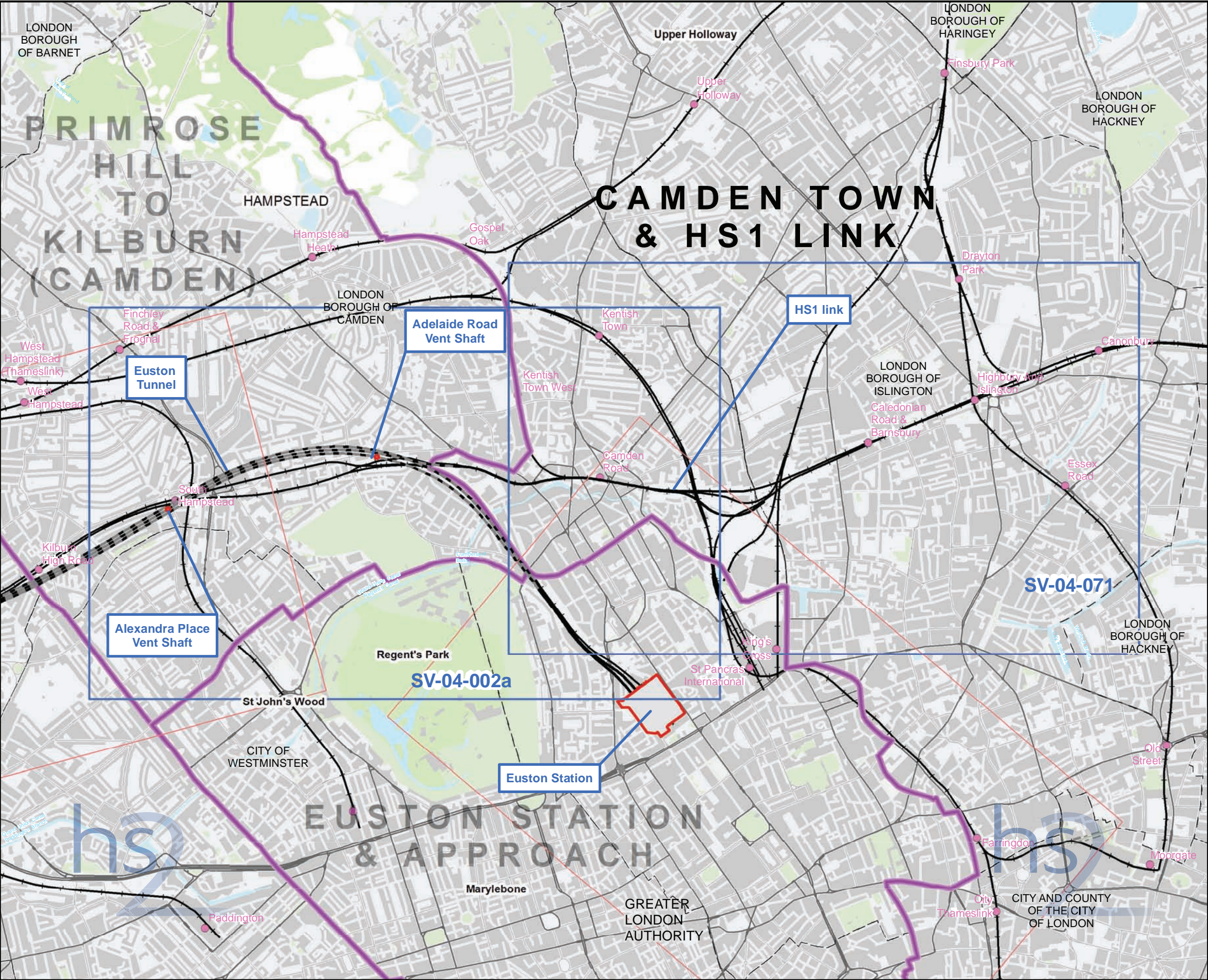
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Scale at A3: 1:25,000

0 250 500 750 1,000 Metres

Date: 29/10/13



Map Series Information:

The SV-04 figure series shows the locations at which a quantitative assessment of the direct effects of operational sound and/or vibration has been carried out. These are labelled as assessment locations with a reference number to enable cross-reference to the operational sound and vibration reports contained in Volume 5: Appendix SV-004 and Volume 5: Appendix SV-002.


The figure series also shows locations at which baseline sound measurements were carried out. These baseline measurement locations are labelled with a reference number to enable cross-reference to the baseline sound reports contained in Volume 5: Appendix SV-002.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

- Main Map Legend**
- Route in tunnel
 - Route on surface
 - Depot, station, headhouse or portal building
 - Community forum boundary
 - Existing railway station
 - County boundary
 - District/Borough boundary
 - Map sheets included in this community forum
 - Map sheets not included in this community forum

| | |
|------------|--------------------------------------------------------------------------------------------------------------|
| Map Number | SV-04-INDEX-CFA2 |
| Map Name | Index Map of: Assessment and Monitoring Locations for Operational Sound, Noise & Vibration Assessments |
| | Community Forum Area CFA2: Camden Town & HS1 Link |




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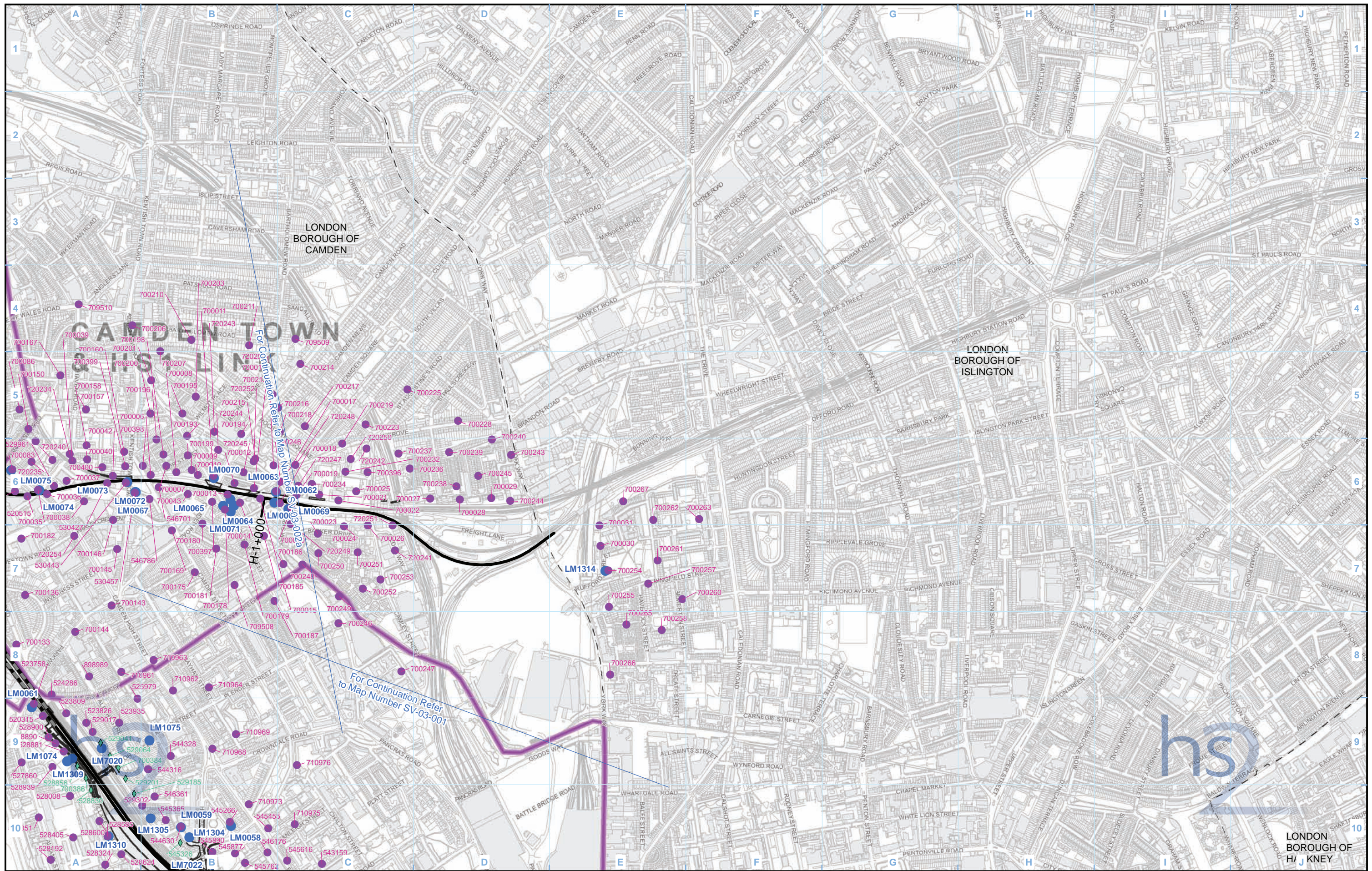


Scale at A3: 1:25,000



Metres

Date: 29/10/13



Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

Legend - Sound related features

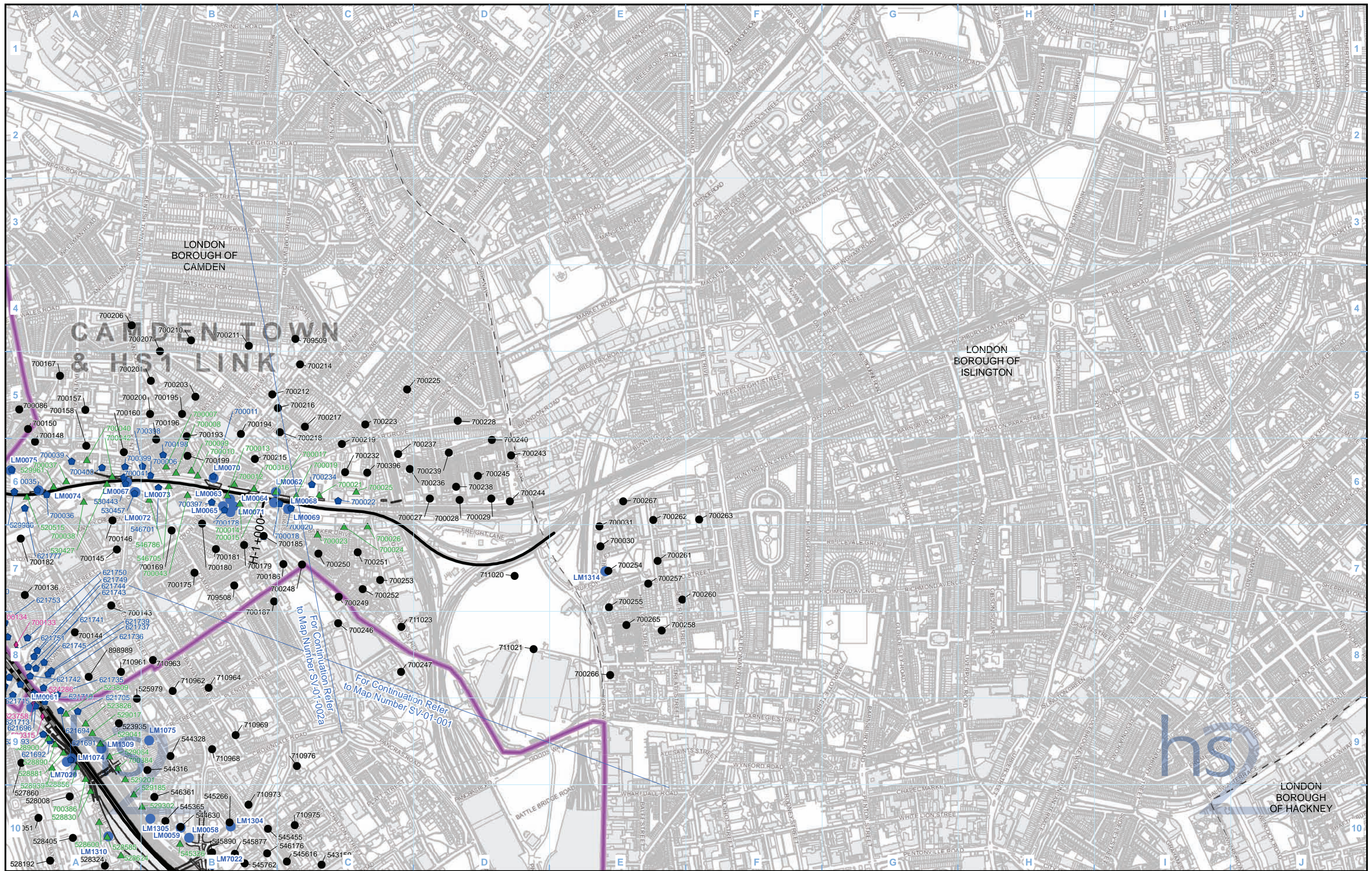
- Construction airborne sound assessment location
- Construction vibration assessment locations
- Construction airborne sound and vibration assessment location
- Baseline measurement locations

labelled with Assessment Location ID reference number
(for details of the assessment results see relevant Vol 5 Appendix SV-003)

(labelled with Measurement Location reference code)

| | |
|-------------------------------------------------------|-------------------------------------------------------------------------------------------|
| Map Number | SV-03-071 |
| Map Name | Assessment and Monitoring Locations for Construction Sound, Noise & Vibration Assessments |
| Community Forum Area CFA02: Camden Town & HS1 Link | |

| | |
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Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

Legend - Sound related features

- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Baseline measurement locations

labelled with Assessment Location ID reference number
(for details of the assessment results see Vol 5 Appendix SV004)

(labelled with Measurement Location reference code)

Map Number SV-04-071

Map Name Assessment and Monitoring Locations for Operational Sound, Noise & Vibration Assessments

Community Forum Area CFA02:
Camden Town & HS1 Link

hs2

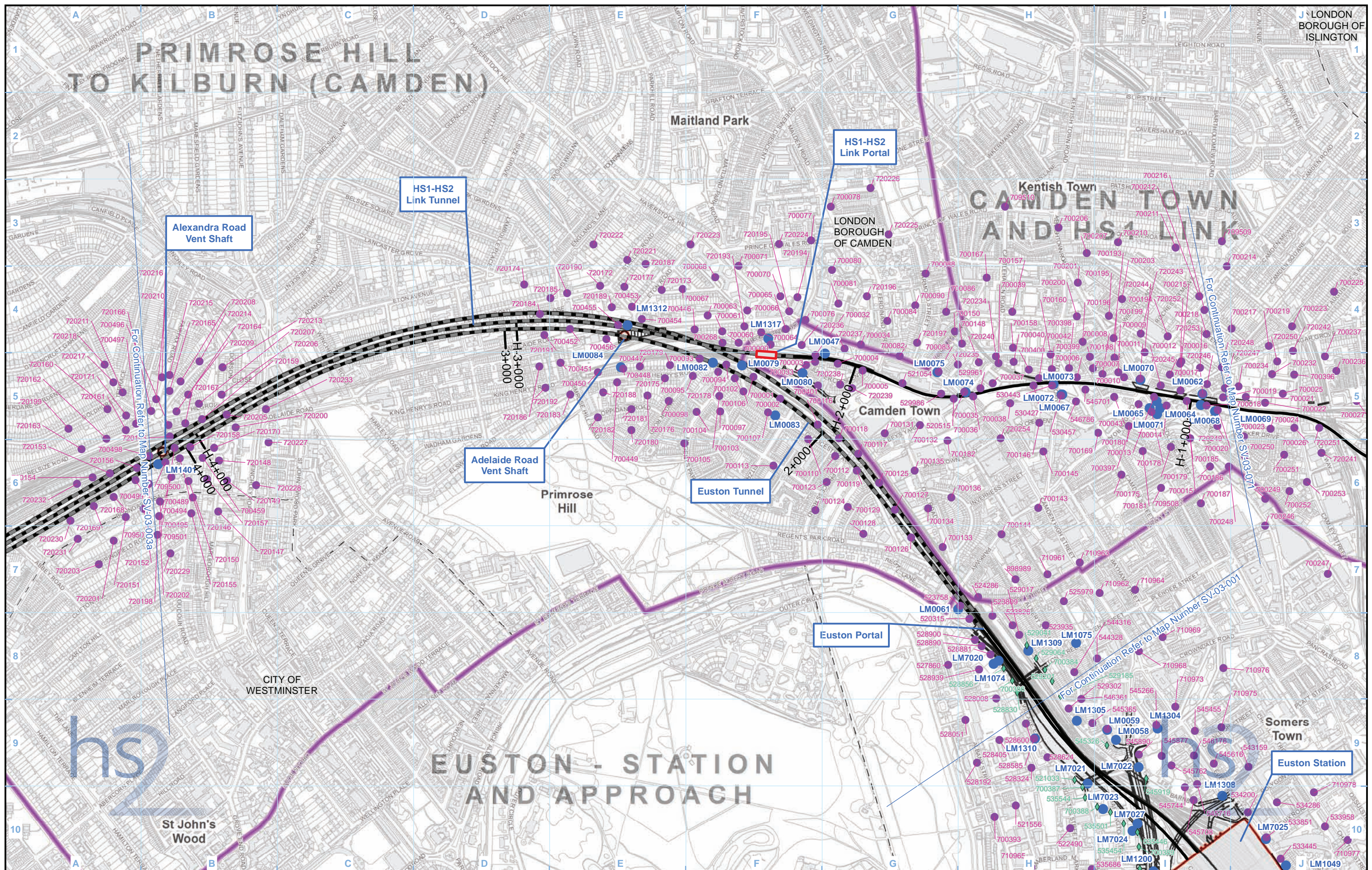
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Doc Number: C250-ARP-EV-MAP-000-003855

Date: 29/10/13



Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

Legend - Sound related features

- Construction airborne sound assessment location
- Construction vibration assessment locations
- Construction airborne sound and vibration assessment location
- Baseline measurement locations

labelled with Assessment Location ID reference number
(for details of the assessment results see relevant Vol 5 Appendix SV-003)

(labelled with Measurement Location reference code)

Map Number

SV-03-002a

Map Name

Assessment and Monitoring Locations for Construction Sound, Noise & Vibration Assessments

Community Forum Area CFA02:
Camden Town & HS1 Link

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Doc Number: C250-ARP-EV-MAP-000-003752

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0 100 200 300 400 Metres

Date: 29/10/13

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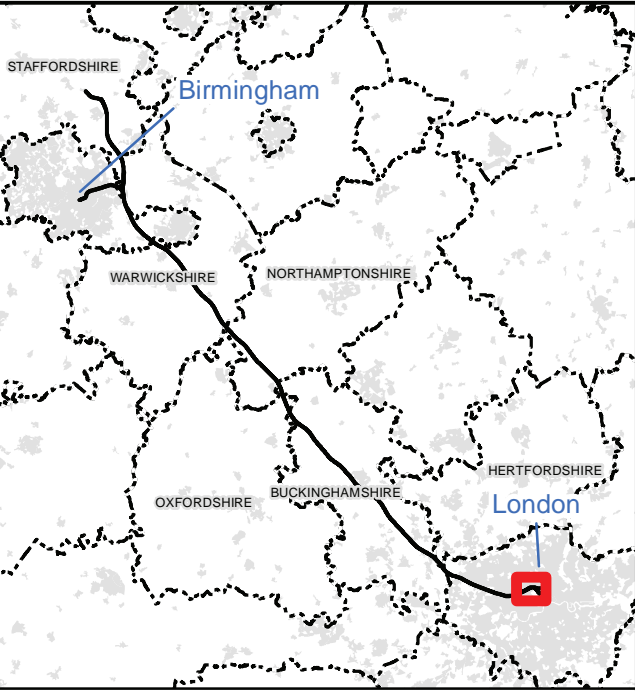
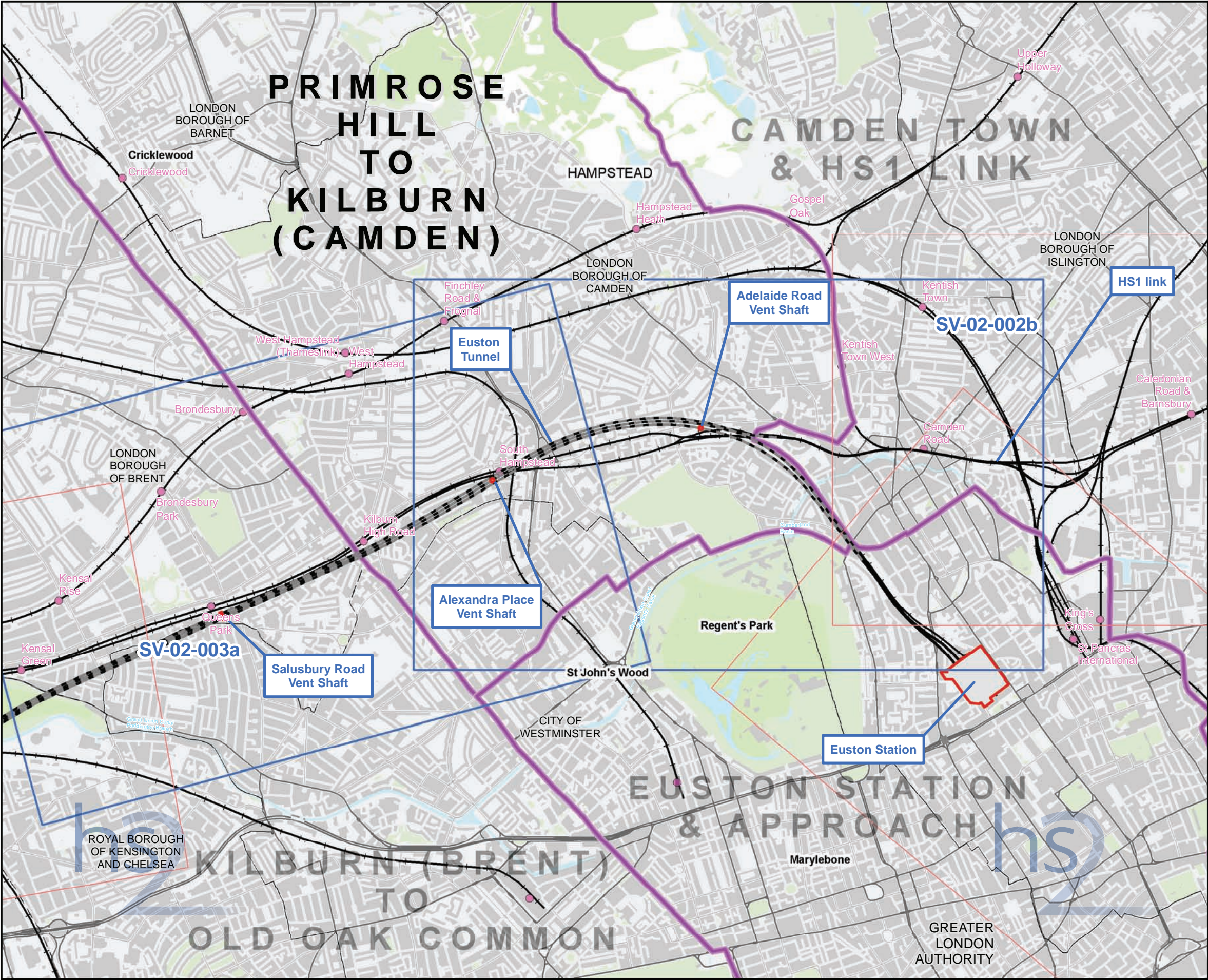
LONDON-WEST MIDLANDS ENVIRONMENTAL STATEMENT

CFA3 | Primrose Hill to Camden (Kilburn)

SV-02 - Operational Airborne Noise and Vibration Impacts and Likely Significant Effects
(with Assessment Locations)

SV-03 - Assessment and Monitoring Locations for Construction Sound, Noise & Vibration Assessments

SV-04 - Assessment and Monitoring Locations for Operational Sound, Noise & Vibration Assessments



Map Series Information:

SV-02 presents the direct operational noise impacts and likely significant effects of the Proposed Scheme.

The SV-02 figure series necessarily contains a large amount of information relating to the operational noise and vibration assessment. It is designed to communicate visually the assessment process from the prediction of impacts to the determination of likely residual significant effects. The corresponding text is included in Vol2 and Vol5.

Key items on the map include the following:

- The Proposed Scheme (the proposed railway alignments and surrounding associated earthworks/roads);
- blue and green lines representing the wayside airborne noise mitigation measures included in the Proposed Scheme;
- the study areas, which indicate the areas within which direct sound and vibration impacts of the scheme have been quantitatively assessed;
- the calculated direct operational impacts of the scheme, displayed as colour-coded buildings and symbols representing buildings that would potentially qualify for noise insulation;
- sound contours representing sound produced by the new railway (displayed in a simpler manner than on SV-01 in order not to obscure other features on the map series);
- the assessment locations at which a quantitative prediction of sound and impacts have been carried out (representing a number of nearby buildings). These are labelled with a unique reference number to enable cross-reference to further detail regarding the assessments in Volume 5: Appendix SV-004; and
- labels indicating where the likely residual direct noise or vibration significant effects have been identified. These are labelled with a unique reference number to enable cross-reference to further detail regarding the assessments in Volume 5: Appendix SV-004.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

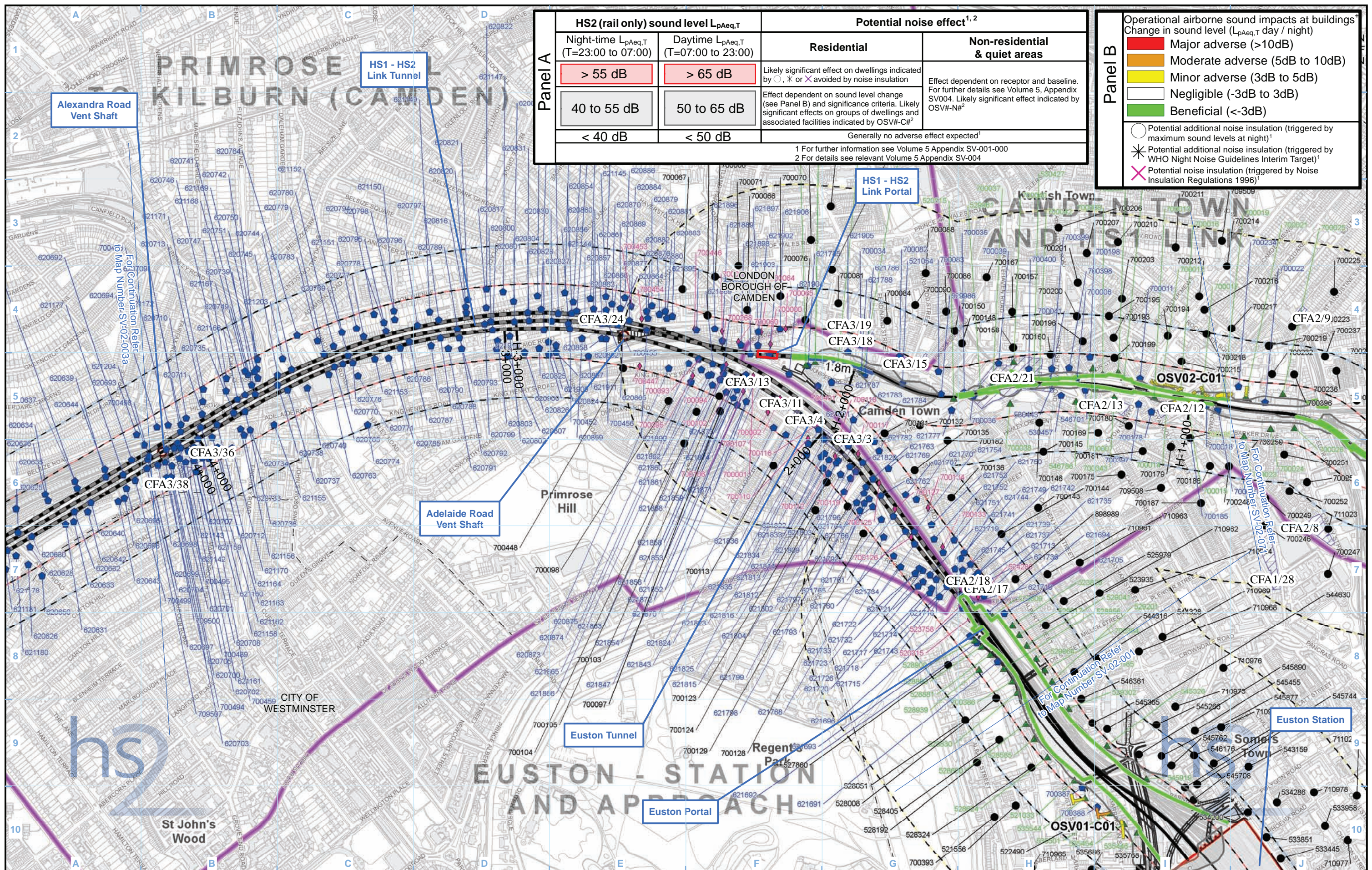
Note: Not all data layers in the legend are represented on every map.

Main Map Legend

| | | | |
|--|----------------------------------------------|--|-------------------------------------------------|
| | Route in tunnel | | Map sheets included in this community forum |
| | Route on surface | | Map sheets not included in this community forum |
| | Depot, station, headhouse or portal building | | |
| | Community forum boundary | | |
| | Existing railway station | | |
| | County boundary | | |
| | District/Borough boundary | | |

| | |
|------------|---------------------------------------------------------------------------------------------------------------------|
| Map Number | SV-02-INDEX-CFA3 |
| Map Name | Index Map of: Operational Noise and Vibration Impacts and Likely Significant Effects (with Assessment Locations) |
| | Community Forum Area CFA3: Primrose Hill to Kilburn (Camden) |

| | | |
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| Doc Number: C250-ARP-EV-MAP-000-004085--P04.00 | Date: 29/10/13 | |



| Panel A | HS2 (rail only) sound level $L_{pAeq,T}$ | | Potential noise effect ^{1,2} | |
|---------|-----------------------------------------------|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| | Night-time $L_{pAeq,T}$ (T=23:00 to 07:00) | Daytime $L_{pAeq,T}$ (T=07:00 to 23:00) | Residential | Non-residential & quiet areas |
| | > 55 dB | > 65 dB | Likely significant effect on dwellings indicated by ○, * or ✕ avoided by noise insulation | Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# |
| | 40 to 55 dB | 50 to 65 dB | Effect dependent on sound level change (see Panel B) and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C# | |
| | < 40 dB | < 50 dB | Generally no adverse effect expected ¹ | |

1 For further information see Volume 5 Appendix SV-001-000
2 For details see relevant Volume 5 Appendix SV-004

Panel B

Operational airborne sound impacts at buildings¹
Change in sound level ($L_{pAeq,T}$ day / night)

- Major adverse (>10dB)
- Moderate adverse (5dB to 10dB)
- Minor adverse (3dB to 5dB)
- Negligible (-3dB to 3dB)
- Beneficial (<-3dB)

○ Potential additional noise insulation (triggered by maximum sound levels at night)¹
✕ Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)¹
✕ Potential noise insulation (triggered by Noise Insulation Regulations 1996)¹

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

+ Residential buildings only
* Labelled with total barrier height above rail level

Legend - Sound related features

- Committed developments (labelled as CFA#/#)
- Envisaged mitigation to avoid / reduce significant noise effects:
 - Landscaping and/or fence barriers*
 - Engineering e.g. cuttings (green tunnels separately marked)
 - Other environmental features e.g. landscaping
- Envisaged measures further reducing noise effects:
 - Engineering e.g. cuttings
 - Airborne sound study area

Ground-borne sound & vibration study area (residential and non-residential)

- Ground-borne sound & vibration study area (highly sensitive non-residential)
- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Minor ground-borne noise or vibration impact*

Map Number: SV-02-002b

Map Name: Operational Noise and Vibration Impacts and Likely Significant Effects (with Assessment Locations)

Community Forum Area CFA03: Primrose Hill to Kilburn (Camden)

hs2

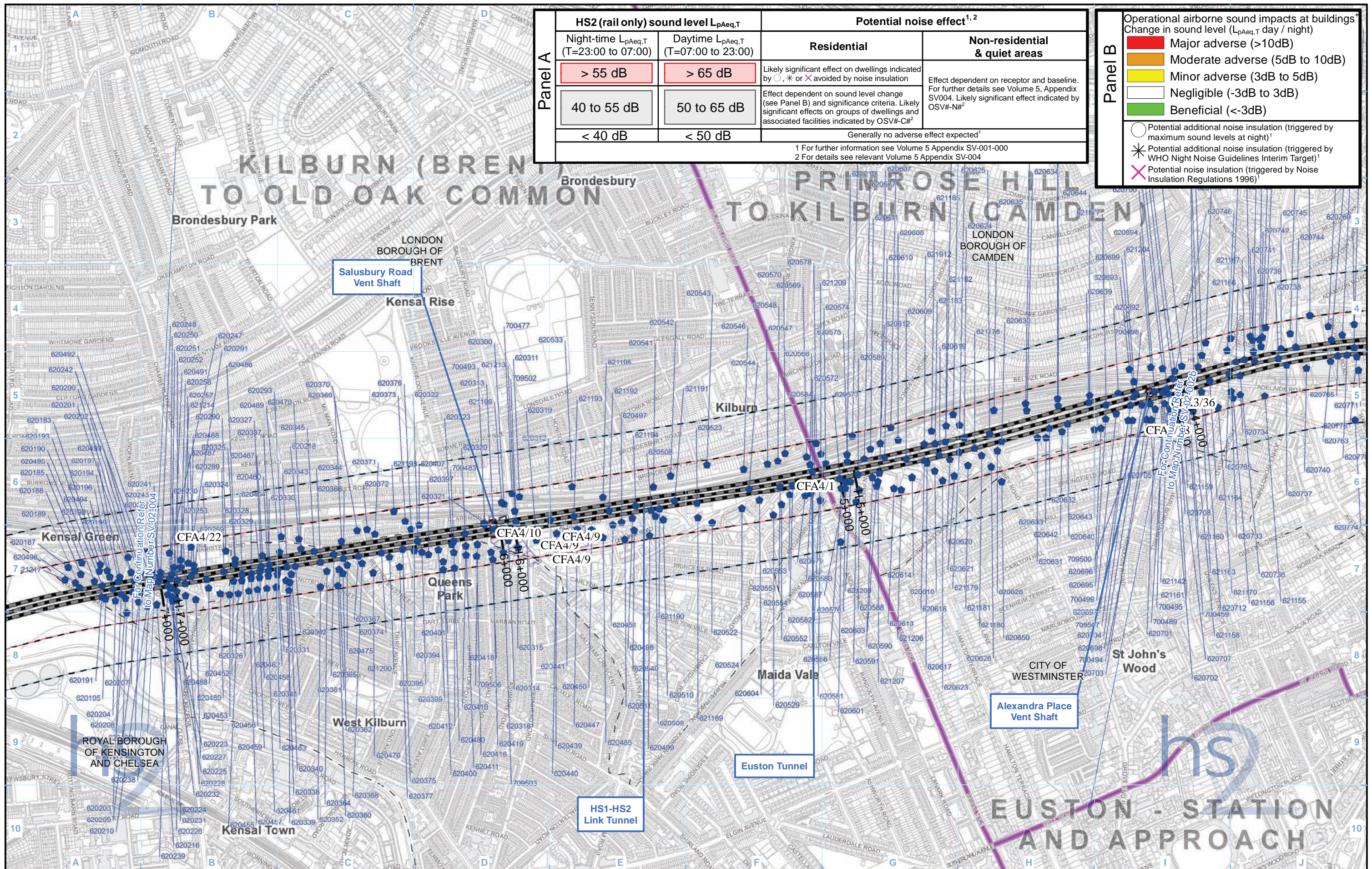
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Date: 29/10/13



| Panel A | HS2 (rail only) sound level $L_{pAeq,T}$ | | Potential noise effect ^{1, 2} | |
|---------|-------------------------------------------------------------------------------------------------------------------|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| | Night-time $L_{pAeq,T}$ (T=23:00 to 07:00) | Daytime $L_{pAeq,T}$ (T=07:00 to 23:00) | Residential | Non-residential & quiet areas |
| | > 55 dB | > 65 dB | Likely significant effect on dwellings indicated by ○, * or ✕ avoided by noise insulation | Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# ² |
| | 40 to 55 dB | 50 to 65 dB | Effect dependent on sound level change (see Panel B) and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C# ² | |
| | < 40 dB | < 50 dB | Generally no adverse effect expected ¹ | |
| | 1 For further information see Volume 5 Appendix SV-001-000 2 For details see relevant Volume 5 Appendix SV-004 | | | |

| Panel B | Operational airborne sound impacts at buildings ⁴ Change in sound level ($L_{pAeq,T}$ day / night) | |
|---------|-------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| | Major adverse (>10dB) | |
| | Moderate adverse (5dB to 10dB) | |
| | Minor adverse (3dB to 5dB) | |
| | Negligible (-3dB to 3dB) | |
| | | Beneficial (<-3dB) |
| | | ○ Potential additional noise insulation (triggered by maximum sound levels at night) ¹ |
| | | * Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target) ¹ |
| | | ✕ Potential noise insulation (triggered by Noise Insulation Regulations 1996) ¹ |

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

+ Residential buildings only
* Labelled with total barrier height above rail level

Legend - Sound related features

- Committed developments (labelled as CFA#/#)
- Envisaged mitigation to avoid / reduce significant noise effects:
 - Landscaping and/or fence barriers*
 - Engineering e.g. cuttings (green tunnels separately marked)
 - Envisaged measures further reducing noise effects:
 - Other environmental features e.g. landscaping
 - Engineering e.g. cuttings
- Airborne sound study area

- Ground-borne sound & vibration study area (residential and non-residential)
- Ground-borne sound & vibration study area (highly sensitive non-residential)
- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Minor ground-borne noise or vibration impact*

Map Number

SV-02-003a

Map Name

Operational Noise and Vibration Impacts and Likely Significant Effects (with Assessment Locations)

Community Forum Area CFA03: Primrose Hill to Kilburn (Camden)

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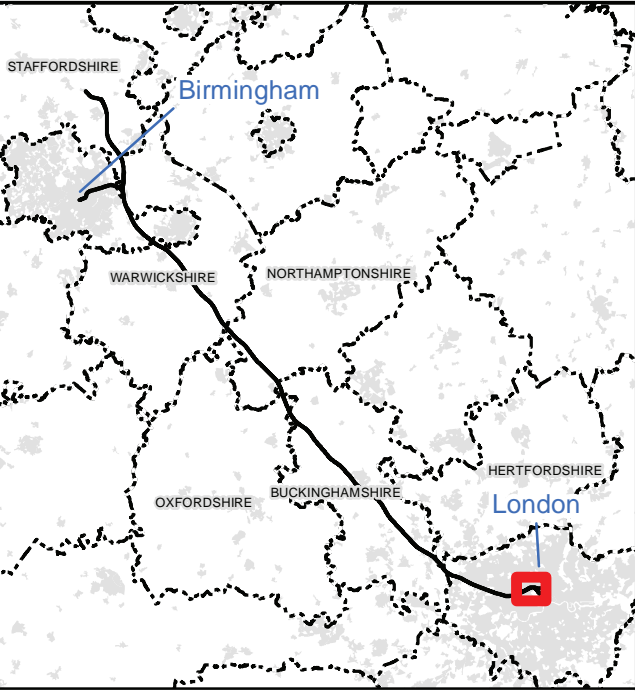
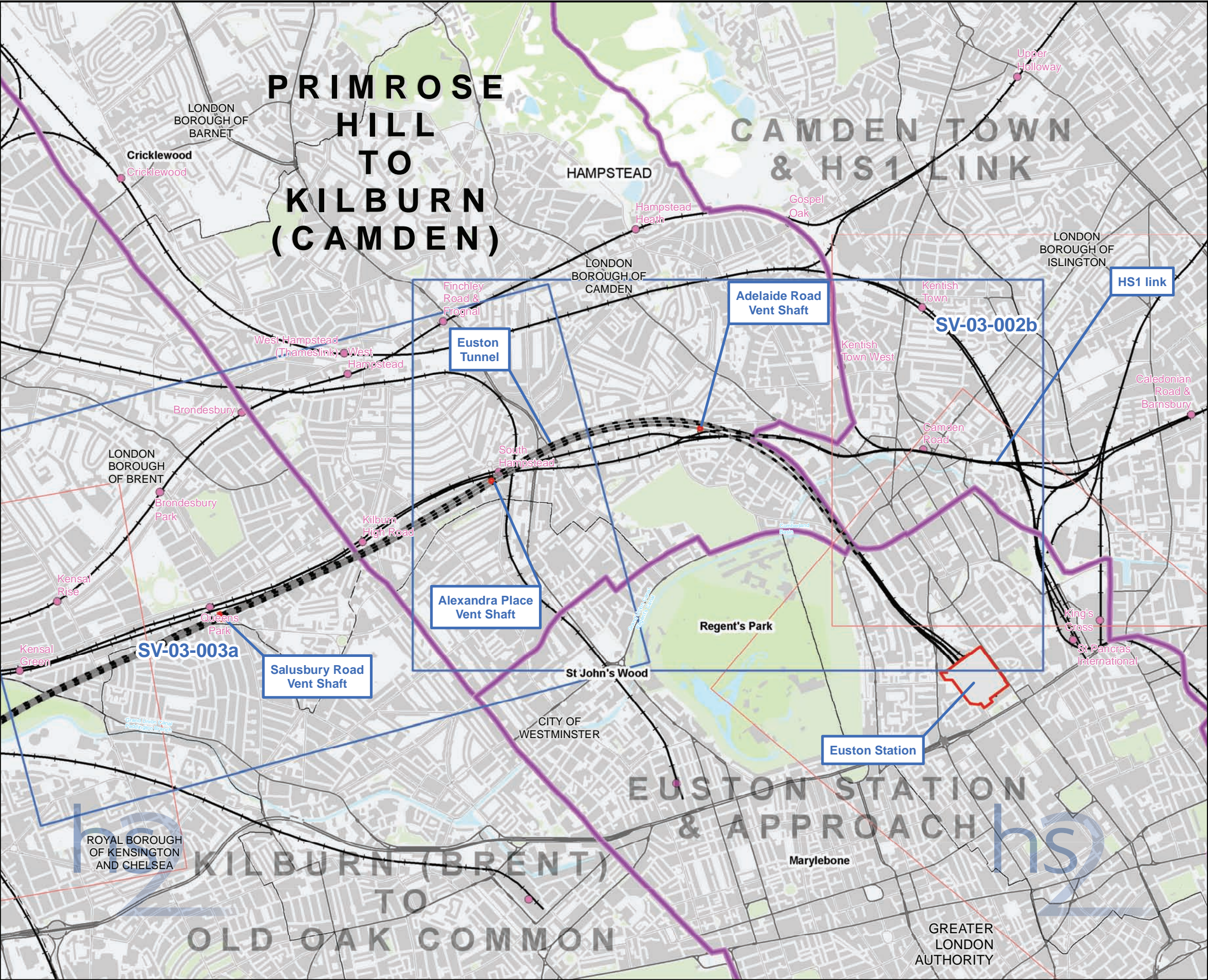
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Doc Number: C250-ARP-EV-MAP-000-003654

Date: 29/10/13

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Map Series Information:

The SV-03 figure series accompanies the construction noise & vibration assessments. It shows the locations at which a quantitative assessment of the direct effects of construction noise and/or vibration has been carried out. These are labelled as assessment locations with a reference number to enable cross-reference to the construction noise and vibration reports contained in Volume 5: Appendix SV-003 and Volume 5: Appendix SV-002.

The figure series also shows locations at which baseline sound measurements were carried out. These baseline measurement locations are labelled with a reference number to enable cross-reference to the baseline sound reports contained in Volume 5: Appendix SV-002.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

Main Map Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- Existing railway station
- County boundary
- District/Borough boundary

- Map sheets included in this community forum
- Map sheets not included in this community forum

Map Number

SV-03-INDEX-CFA3

Map Name

Index Map of:
Assessment and Monitoring Locations for
Construction Sound, Noise & Vibration Assessments

Community Forum Area CFA3:
Primrose Hill to Kilburn (Camden)

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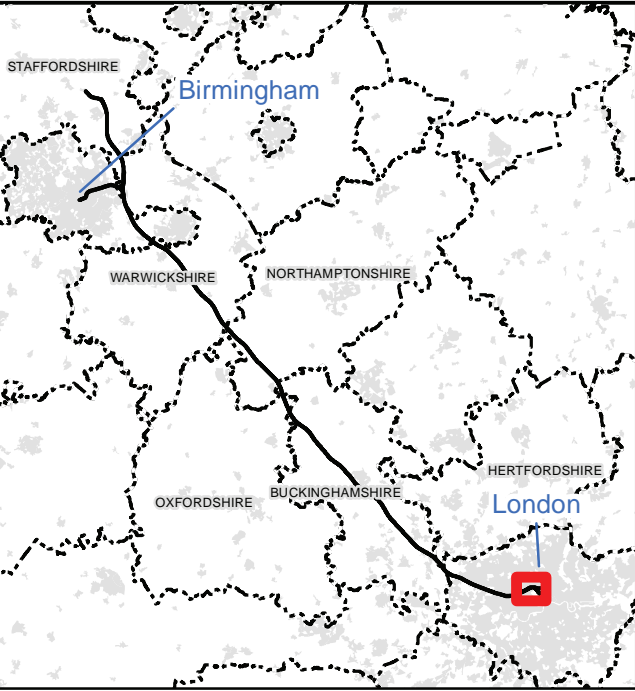
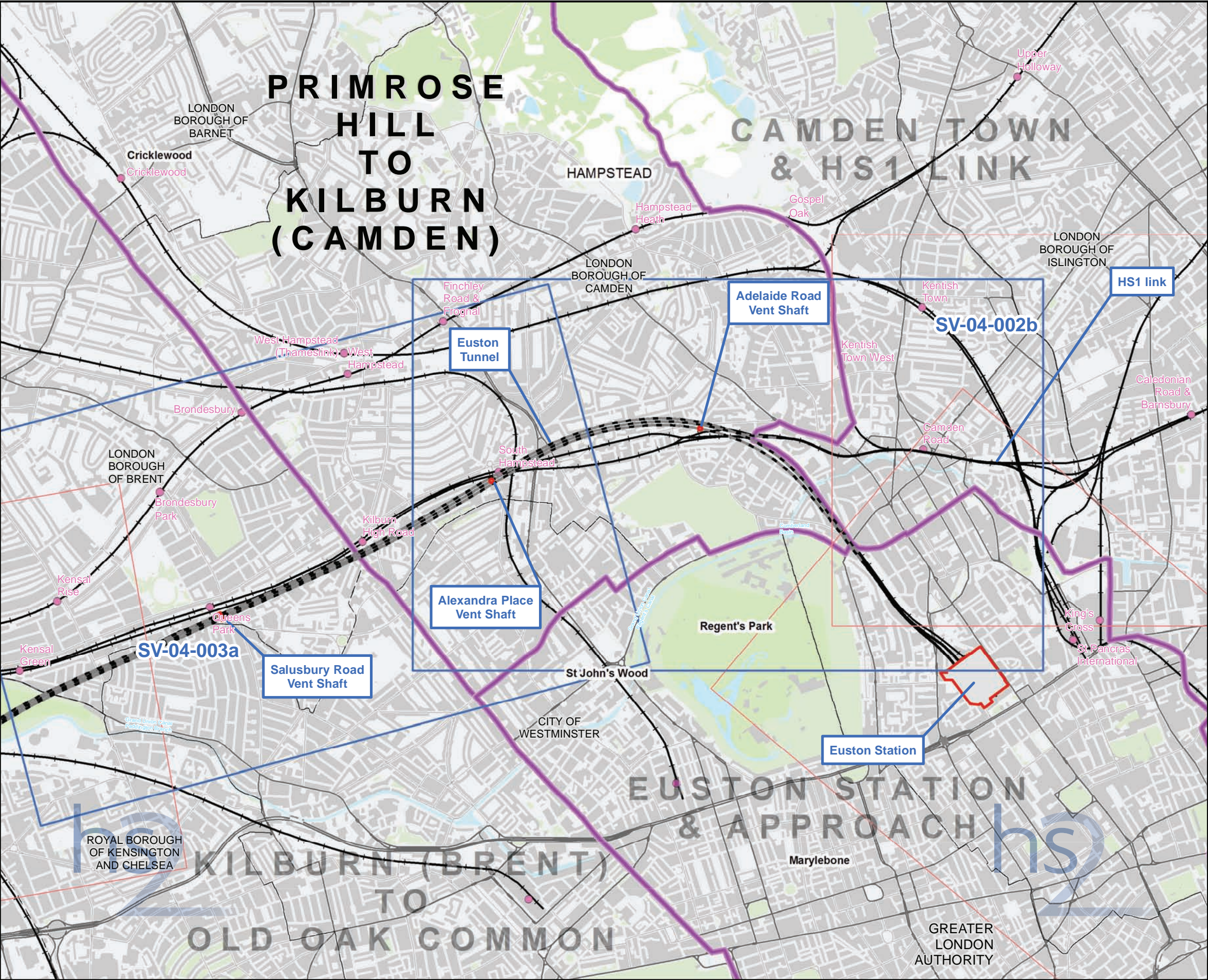
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Date: 29/10/13



Map Series Information:

The SV-04 figure series shows the locations at which a quantitative assessment of the direct effects of operational sound and/or vibration has been carried out. These are labelled as assessment locations with a reference number to enable cross-reference to the operational sound and vibration reports contained in Volume 5: Appendix SV-004 and Volume 5: Appendix SV-002.

The figure series also shows locations at which baseline sound measurements were carried out. These baseline measurement locations are labelled with a reference number to enable cross-reference to the baseline sound reports contained in Volume 5: Appendix SV-002.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

Main Map Legend

Route in tunnel

Route on surface

Depot, station, headhouse or portal building

Community forum boundary

Existing railway station

County boundary

District/Borough boundary

Map sheets included in this community forum

Map sheets not included in this community forum

Map Number

SV-04-INDEX-CFA3

Map Name

Index Map of:
Assessment and Monitoring Locations for
Operational Sound, Noise & Vibration Assessments

Community Forum Area CFA3:
Primrose Hill to Kilburn (Camden)

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0

250

500

750

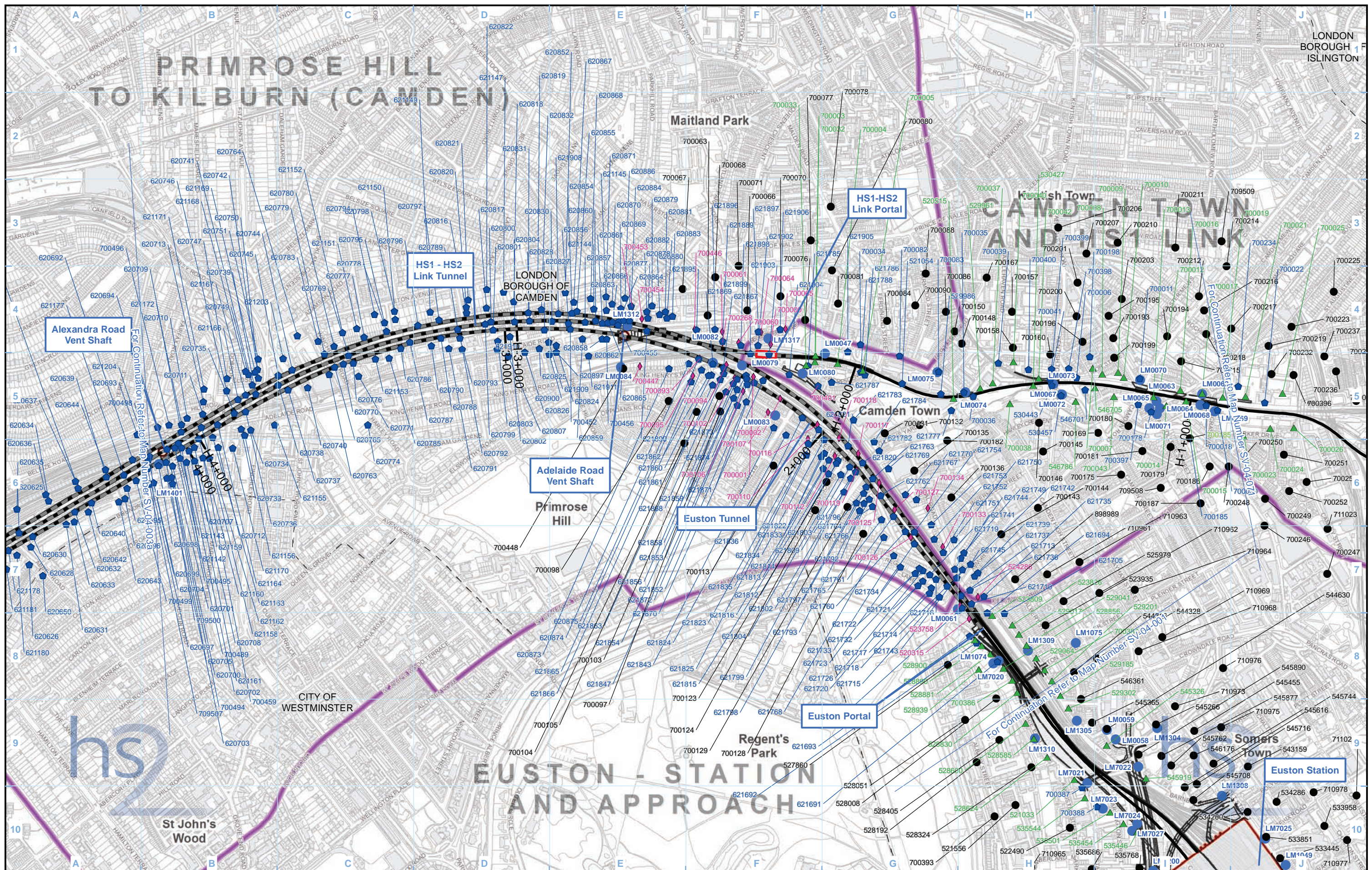
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Metres

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Date: 29/10/13



Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks: Non engineering earthworks:

- Embankment
- Cutting
- Embankment
- Cutting

Legend - Sound related features

- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Baseline measurement locations

labelled with Assessment Location ID reference number
(for details of the assessment results see Vol 5 Appendix SV004)

(labelled with Measurement Location reference code)

Map Number SV-04-002b

Map Name
Assessment and Monitoring Locations for
Operational Sound, Noise & Vibration
Assessments

Community Forum Area CFA03:
Primrose Hill to Kilburn (Camden)

hs2

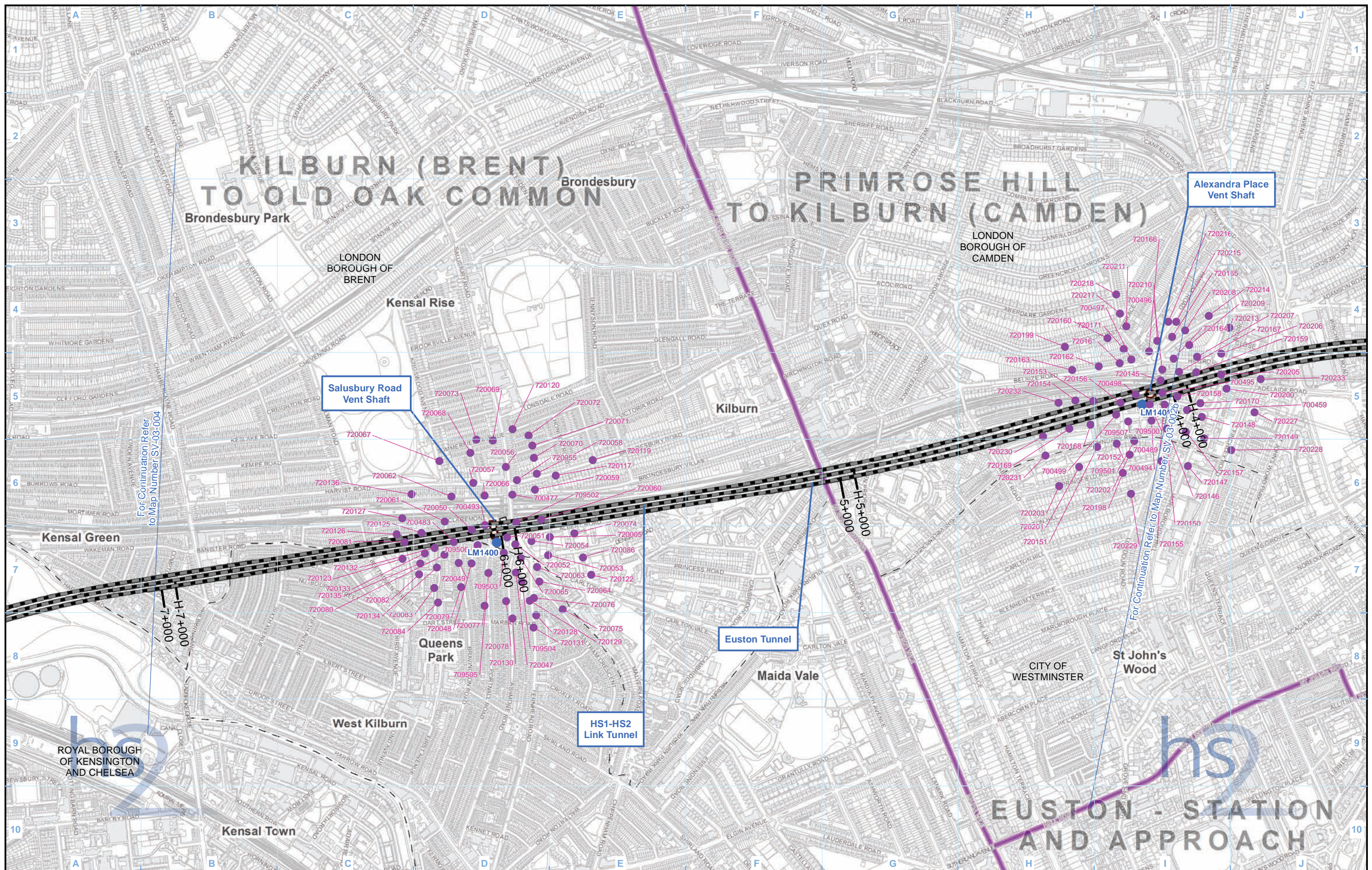
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Doc Number: C250-ARP-EV-MAP-000-003854

Date: 29/10/13



Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks: Non engineering earthworks:

- Embankment
- Cutting
- Embankment
- Cutting

Legend - Sound related features

- Construction airborne sound assessment location
- Construction vibration assessment locations
- Construction airborne sound and vibration assessment location
- Baseline measurement locations

labelled with Assessment Location ID reference number
(for details of the assessment results see relevant Vol 5 Appendix SV-003)

(labelled with Measurement Location reference code)

Map Number SV-03-003a

Map Name
Assessment and Monitoring Locations for
Construction Sound, Noise & Vibration
Assessments

Community Forum Area CFA03:
Primrose Hill to Kilburn (Camden)

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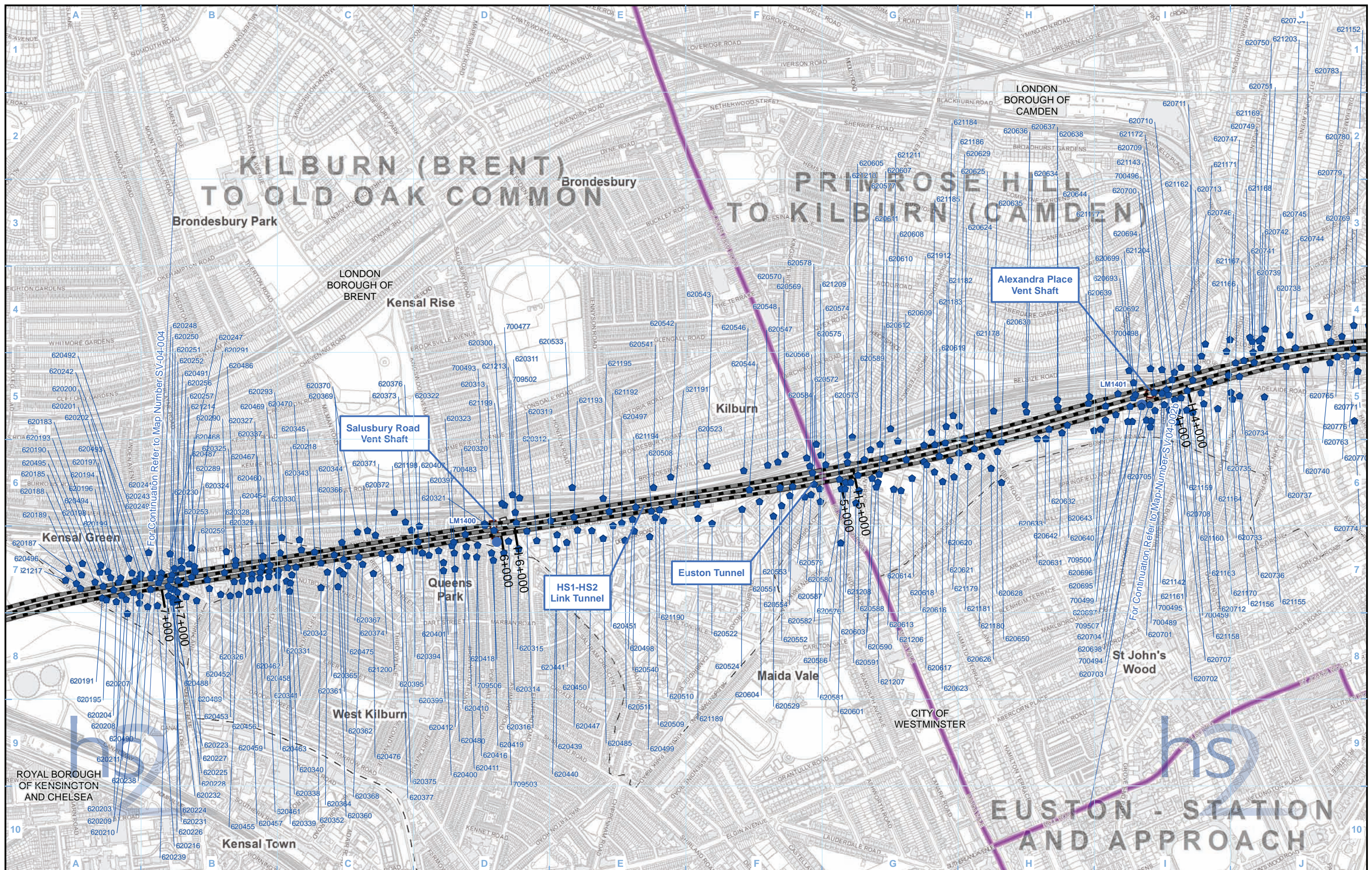
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Date: 29/10/13



Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

Legend - Sound related features

- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Baseline measurement locations

labelled with Assessment Location ID reference number
(for details of the assessment results see Vol 5 Appendix SV004)

(labelled with Measurement Location reference code)

Map Number

SV-04-003a

Map Name

Assessment and Monitoring Locations for
Operational Sound, Noise & Vibration
Assessments

Community Forum Area CFA03:
Primrose Hill to Kilburn (Camden)



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LONDON-WEST MIDLANDS ENVIRONMENTAL STATEMENT

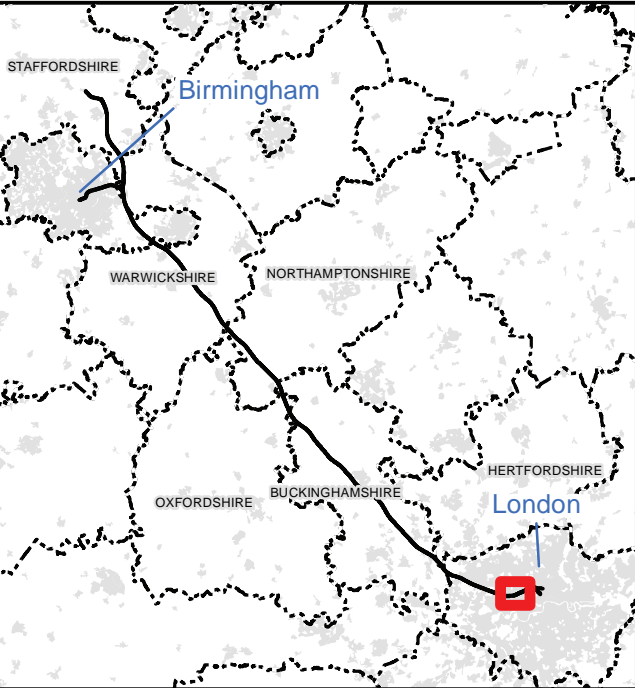
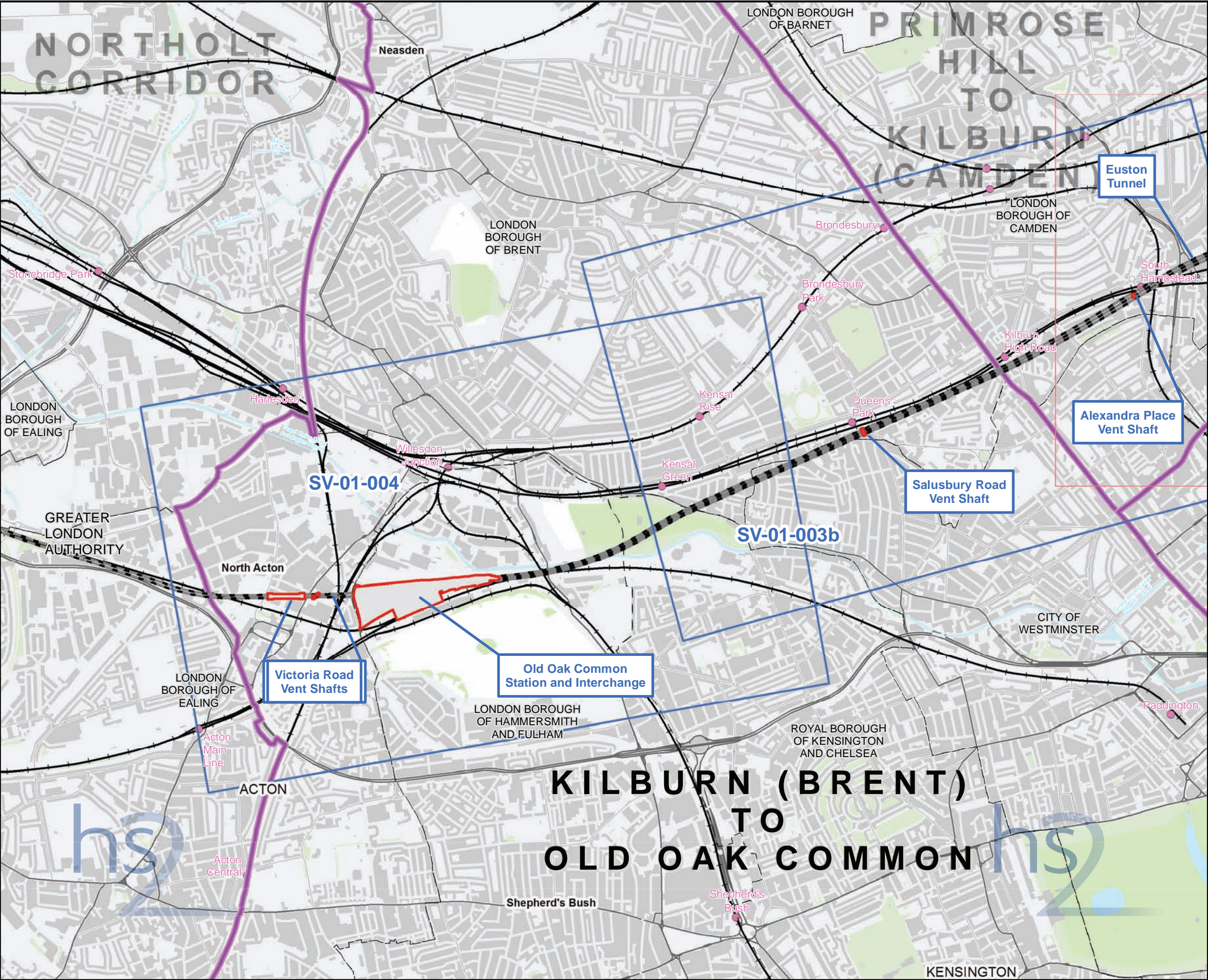
CFA₄ | Kilburn (Brent) to Old Oak Common

SV-01 - Operational Sound Contour Maps and Likely Significant Effects

SV-02 - Operational Airborne Noise and Vibration Impacts and Likely Significant Effects
(with Assessment Locations)

SV-03 - Assessment and Monitoring Locations for Construction Sound, Noise & Vibration Assessments

SV-04 - Assessment and Monitoring Locations for Operational Sound, Noise & Vibration Assessments



Map Series Information:

SV-01 presents the predicted operational sound from the new railway.

The sound levels from the new railway (expressed as $L_{pAeq,T}$) are presented in typical noise mapping colours in 5 dB steps. There is a panel at the top right of the figure; the left-hand section of this panel contains a key communicating the night-time and daytime sound levels represented by the various colours. The right-hand part of the same panel contains text explaining how the sound levels presented on the figure inform the assessment of direct noise impacts and likely significant effects. A corresponding and similar panel is found on SV-02, along with the key sound contours that were used within the environmental assessment.

Also presented on SV-01 are the following (which are also included on SV-02):

- A representation of the Proposed Scheme, including the railway alignment (indicating whether it is on the surface or in tunnel), any new and altered roads and all associated engineering and environmental mitigation earthworks;
- blue and green lines representing the wayside airborne noise mitigation measures included in the Proposed Scheme;
- symbols representing buildings that would potentially qualify for noise insulation;
- labels identifying the residual likely significant noise effects of the Proposed Scheme, and
- the extent of the study area within which the direct impacts and effects of the scheme have been quantitatively assessed.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

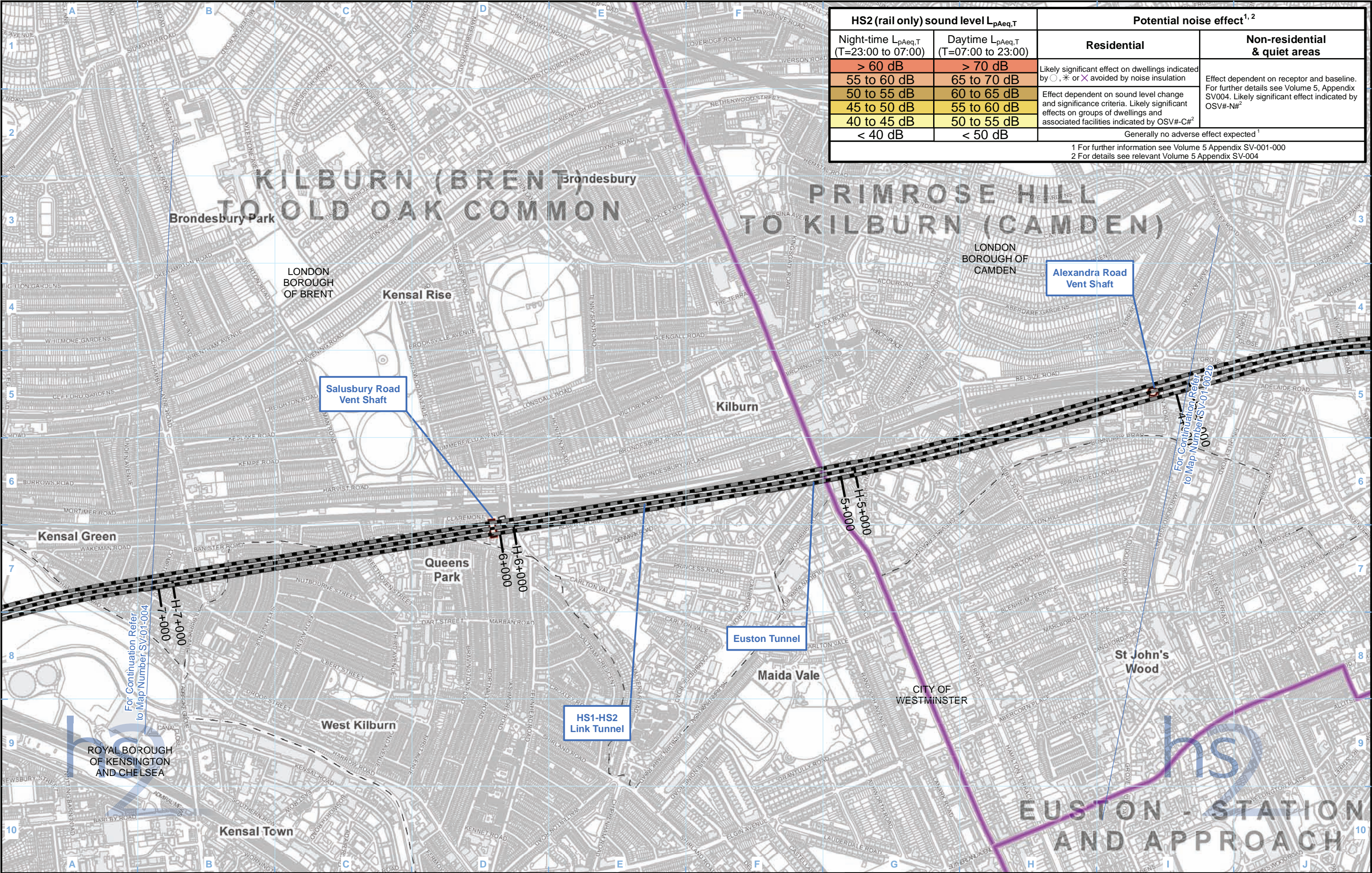
Note: Not all data layers in the legend are represented on every map.

Main Map Legend

| | |
|----------------------------------------------|-------------------------------------------------|
| Route in tunnel | Map sheets included in this community forum |
| Route on surface | Map sheets not included in this community forum |
| Depot, station, headhouse or portal building | |
| Community forum boundary | |
| Existing railway station | |
| County boundary | |
| District/Borough boundary | |

| | |
|------------|-----------------------------------------------------------------------------------|
| Map Number | SV-01-INDEX-CFA4 |
| Map Name | Index Map of: Operational Sound Contour Maps and Likely Significant Effects |
| | Community Forum Area CFA4: Kilburn (Brent) to Old Oak Common |

| | | |
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| Doc Number: C250-ARP-EV-MAP-000-004061--P04.00 | | Date: 29/10/13 |



| HS2 (rail only) sound level L _{pAeq,T} | | Potential noise effect ^{1, 2} | |
|-------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Night-time L _{pAeq,T} (T=23:00 to 07:00) | Daytime L _{pAeq,T} (T=07:00 to 23:00) | Residential | Non-residential & quiet areas |
| > 60 dB | > 70 dB | Likely significant effect on dwellings indicated by ○, ✱ or ✕ avoided by noise insulation | Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# ² |
| 55 to 60 dB | 65 to 70 dB | | |
| 50 to 55 dB | 60 to 65 dB | Effect dependent on sound level change and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C# ² | |
| 45 to 50 dB | 55 to 60 dB | | |
| 40 to 45 dB | 50 to 55 dB | | |
| < 40 dB | < 50 dB | | |
| Generally no adverse effect expected ¹ | | | |
| 1 For further information see Volume 5 Appendix SV-001-000 2 For details see relevant Volume 5 Appendix SV-004 | | | |

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

Legend - Sound related features

Envisaged mitigation to avoid / reduce significant noise effects:

- Landscaping and/or fence barriers*
- Engineering e.g. cuttings (green tunnels separately marked)

Envisaged measures further reducing noise effects:

- Other environmental e.g. landscaping
- Engineering e.g. cuttings

Airborne sound study area

- Potential additional noise insulation (triggered by maximum sound levels at night)¹
- Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)¹
- Potential noise insulation (triggered by Noise Insulation Regulations 1996)¹

* Labelled with total barrier height above rail level

Map Number SV-01-003b

Map Name Operational Sound Contour Maps and Likely Significant Effects

Community Forum Area CFA04: Kilburn (Brent) to Old Oak Common

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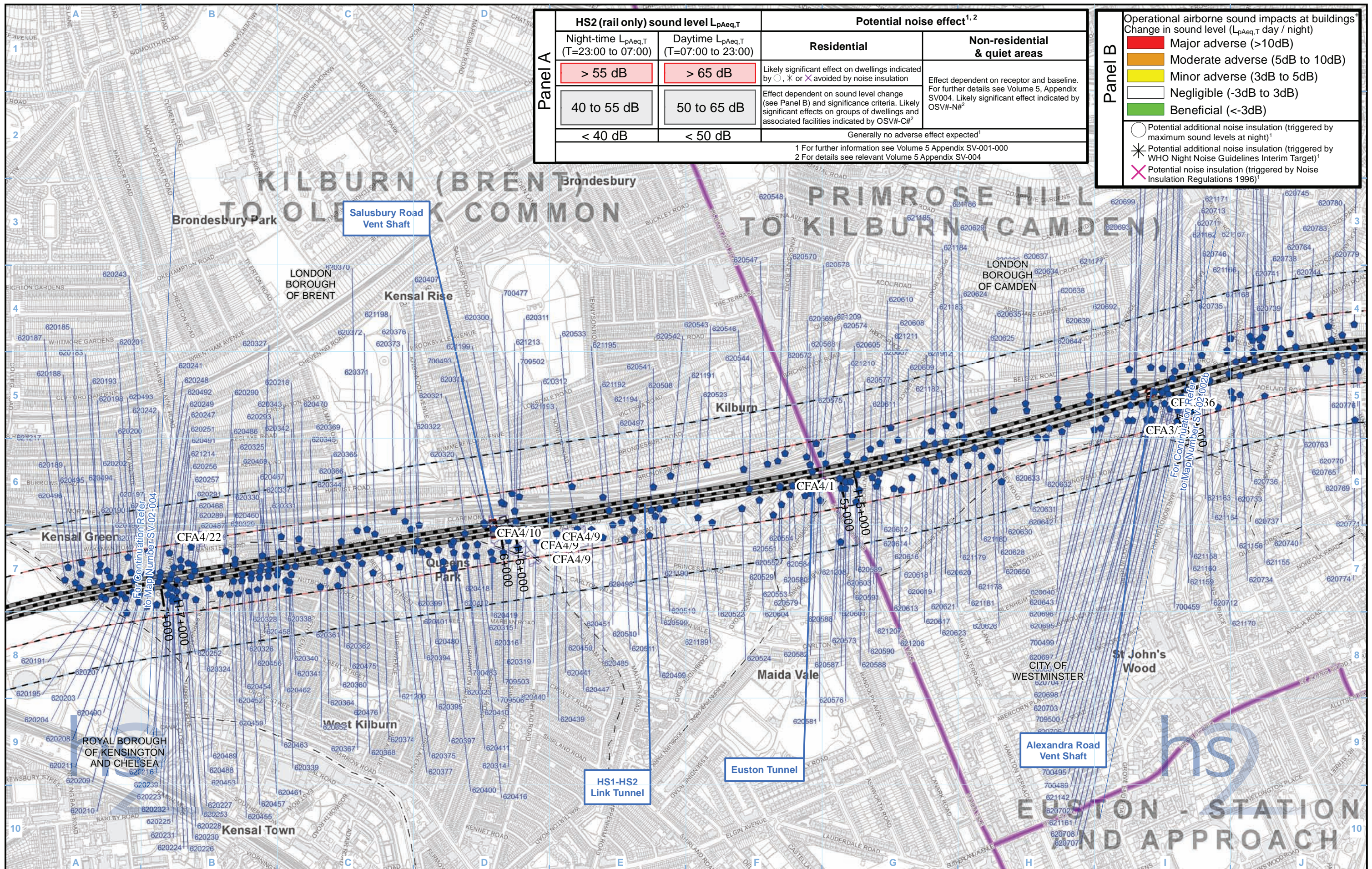
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Doc Number: C250-ARP-EV-MAP-000-003552

Date: 29/10/13



| Panel A | HS2 (rail only) sound level $L_{pAeq,T}$ | | Potential noise effect ^{1,2} | |
|---------|-----------------------------------------------|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| | Night-time $L_{pAeq,T}$ (T=23:00 to 07:00) | Daytime $L_{pAeq,T}$ (T=07:00 to 23:00) | Residential | Non-residential & quiet areas |
| | > 55 dB | > 65 dB | Likely significant effect on dwellings indicated by ○, * or ✕ avoided by noise insulation | Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# |
| | 40 to 55 dB | 50 to 65 dB | Effect dependent on sound level change (see Panel B) and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C# | |
| | < 40 dB | < 50 dB | Generally no adverse effect expected ¹ | |

1 For further information see Volume 5 Appendix SV-001-000
2 For details see relevant Volume 5 Appendix SV-004

| Panel B | Operational airborne sound impacts at buildings ⁴ Change in sound level ($L_{pAeq,T}$ day / night) | |
|---------|-------------------------------------------------------------------------------------------------------------------|--|
| | Major adverse (>10dB) | |
| | Moderate adverse (5dB to 10dB) | |
| | Minor adverse (3dB to 5dB) | |
| | Negligible (-3dB to 3dB) | |

○ Potential additional noise insulation (triggered by maximum sound levels at night)¹
✕ Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)¹
✕ Potential noise insulation (triggered by Noise Insulation Regulations 1996)¹

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Legend - Sound related features

- Ground-borne sound & vibration study area (residential and non-residential)
- Ground-borne sound & vibration study area (highly sensitive non-residential)
- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Minor ground-borne noise or vibration impact*

Legend - Engineering earthworks:

- Embankment
- Cutting

Legend - Non engineering earthworks:

- Embankment
- Cutting

* Residential buildings only
* Labelled with total barrier height above rail level

Legend - Sound related features

- Committed developments (labelled as CFA#/#)
- Envisaged mitigation to avoid / reduce significant noise effects:
 - Landscaping and/or fence barriers*
 - Engineering e.g. cuttings (green tunnels separately marked)
 - Envisaged measures further reducing noise effects:
 - Other environmental features e.g. landscaping
 - Engineering e.g. cuttings
- Airborne sound study area

Map Number: SV-02-003b

Map Name: Operational Noise and Vibration Impacts and Likely Significant Effects (with Assessment Locations)

Community Forum Area CFA04: Kilburn (Brent) to Old Oak Common

hs2

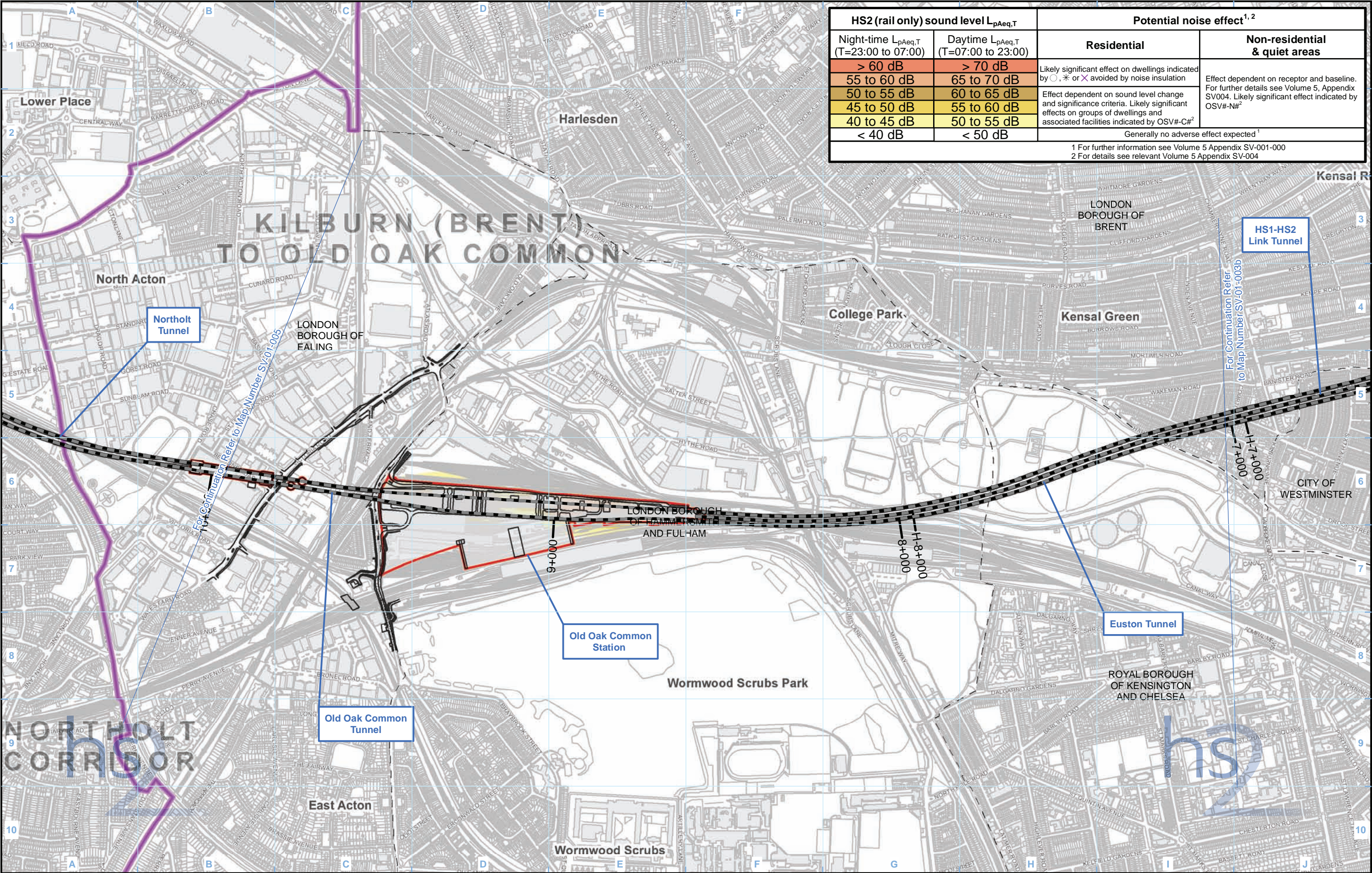
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| HS2 (rail only) sound level L _{pAeq,T} | | Potential noise effect ^{1, 2} | |
|------------------------------------------------------------|---------------------------------------------------|-------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Night-time L _{pAeq,T} (T=23:00 to 07:00) | Daytime L _{pAeq,T} (T=07:00 to 23:00) | Residential | Non-residential & quiet areas |
| > 60 dB | > 70 dB | Likely significant effect on dwellings indicated by ○, ✱ or ✕ avoided by noise insulation | Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# ² |
| 55 to 60 dB | 65 to 70 dB | | |
| 50 to 55 dB | 60 to 65 dB | | |
| 45 to 50 dB | 55 to 60 dB | | |
| 40 to 45 dB | 50 to 55 dB | | |
| < 40 dB | < 50 dB | Generally no adverse effect expected ¹ | |
| 1 For further information see Volume 5 Appendix SV-001-000 | | | |
| 2 For details see relevant Volume 5 Appendix SV-004 | | | |

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

Legend - Sound related features

- Envisaged mitigation to avoid / reduce significant noise effects:
- Landscaping and/or fence barriers*
- Engineering e.g. cuttings (green tunnels separately marked)
- Envisaged measures further reducing noise effects:
- Other environmental e.g. landscaping
- Engineering e.g. cuttings

- Airborne sound study area
- Potential additional noise insulation (triggered by maximum sound levels at night)¹
- Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)¹
- Potential noise insulation (triggered by Noise Insulation Regulations 1996)¹

* Labelled with total barrier height above rail level

Map Number

SV-01-004

Map Name

Operational Sound Contour Maps and Likely Significant Effects

Community Forum Area CFA04:

Kilburn (Brent) to Old Oak Common

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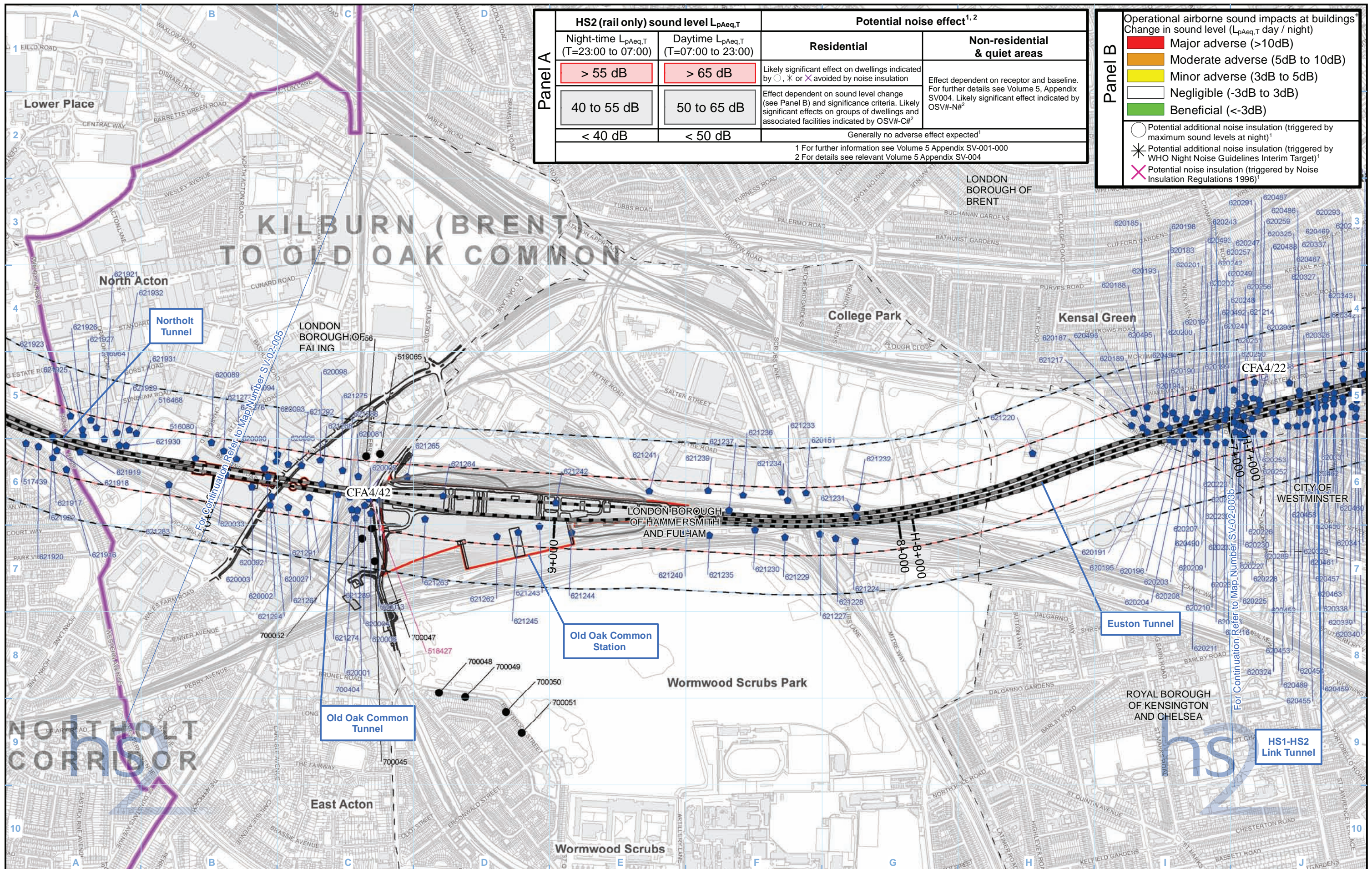
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Doc Number: C250-ARP-EV-MAP-000-003553

Date: 29/10/13



| Panel A | HS2 (rail only) sound level $L_{pAeq,T}$ | | Potential noise effect ^{1,2} | |
|---------|-----------------------------------------------|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| | Night-time $L_{pAeq,T}$ (T=23:00 to 07:00) | Daytime $L_{pAeq,T}$ (T=07:00 to 23:00) | Residential | Non-residential & quiet areas |
| | > 55 dB | > 65 dB | Likely significant effect on dwellings indicated by ○, ✱ or ✕ avoided by noise insulation | Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# ² |
| | 40 to 55 dB | 50 to 65 dB | Effect dependent on sound level change (see Panel B) and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C# ² | |
| | < 40 dB | < 50 dB | Generally no adverse effect expected ¹ | |

1 For further information see Volume 5 Appendix SV-001-000
2 For details see relevant Volume 5 Appendix SV-004

| Panel B | Operational airborne sound impacts at buildings ¹ Change in sound level ($L_{pAeq,T}$ day / night) | |
|---------|-------------------------------------------------------------------------------------------------------------------|--|
| | Major adverse (>10dB) | |
| | Moderate adverse (5dB to 10dB) | |
| | Minor adverse (3dB to 5dB) | |
| | Negligible (-3dB to 3dB) | |

○ Potential additional noise insulation (triggered by maximum sound levels at night)¹
✱ Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)¹
✕ Potential noise insulation (triggered by Noise Insulation Regulations 1996)¹

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

+ Residential buildings only
* Labelled with total barrier height above rail level

Legend - Sound related features

- Committed developments (labelled as CFA#/#)
- Envisaged mitigation to avoid / reduce significant noise effects:
 - Landscaping and/or fence barriers*
 - Engineering e.g. cuttings (green tunnels separately marked)
 - Envisaged measures further reducing noise effects:
 - Other environmental features e.g. landscaping
 - Engineering e.g. cuttings
- Airborne sound study area

- Ground-borne sound & vibration study area (residential and non-residential)
- Ground-borne sound & vibration study area (highly sensitive non-residential)
- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Minor ground-borne noise or vibration impact*

Map Number: SV-02-004

Map Name: Operational Noise and Vibration Impacts and Likely Significant Effects (with Assessment Locations)

Community Forum Area CFA04: Kilburn (Brent) to Old Oak Common

hs2

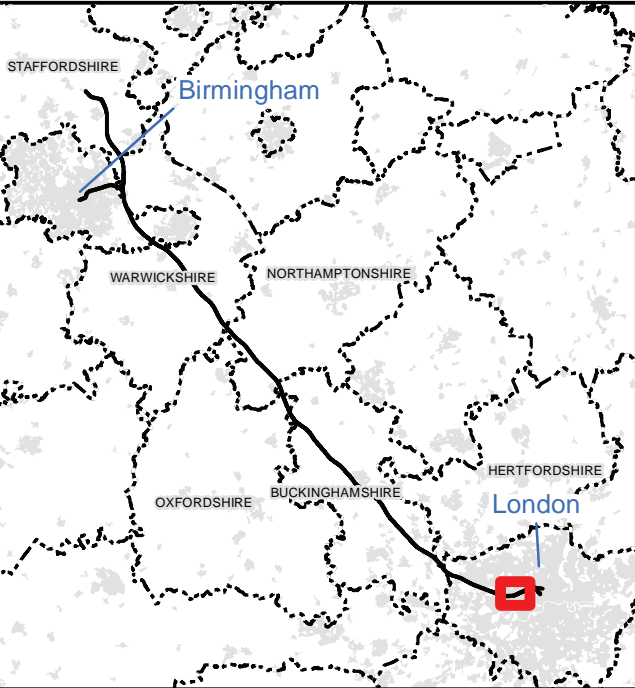
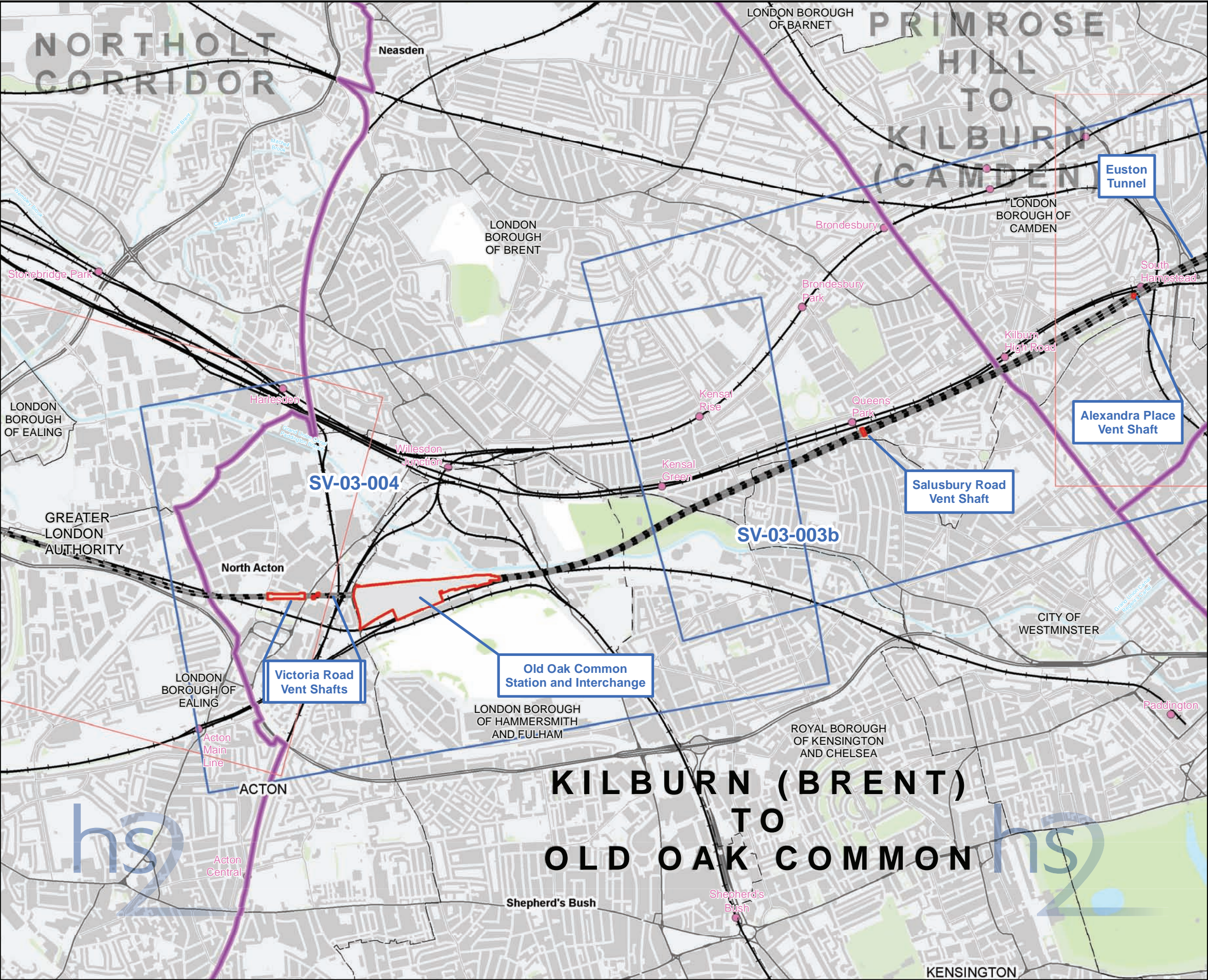
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Map Series Information:

The SV-03 figure series accompanies the construction noise & vibration assessments. It shows the locations at which a quantitative assessment of the direct effects of construction noise and/or vibration has been carried out. These are labelled as assessment locations with a reference number to enable cross-reference to the construction noise and vibration reports contained in Volume 5: Appendix SV-003 and Volume 5: Appendix SV-002.

The figure series also shows locations at which baseline sound measurements were carried out. These baseline measurement locations are labelled with a reference number to enable cross-reference to the baseline sound reports contained in Volume 5: Appendix SV-002.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

Main Map Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- Existing railway station
- County boundary
- District/Borough boundary
- Map sheets included in this community forum
- Map sheets not included in this community forum

Map Number: SV-03-INDEX-CFA4

Map Name: Index Map of:
Assessment and Monitoring Locations for
Construction Sound, Noise & Vibration Assessments

Community Forum Area CFA4:
Kilburn (Brent) to Old Oak Common

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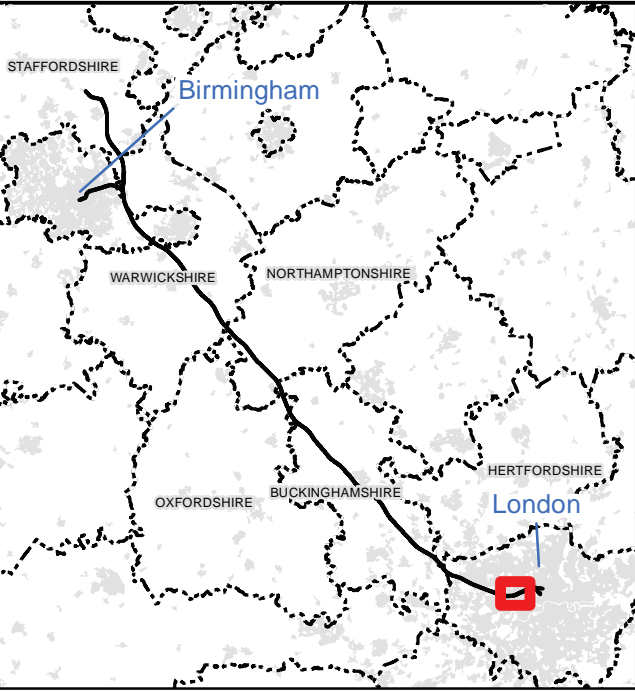
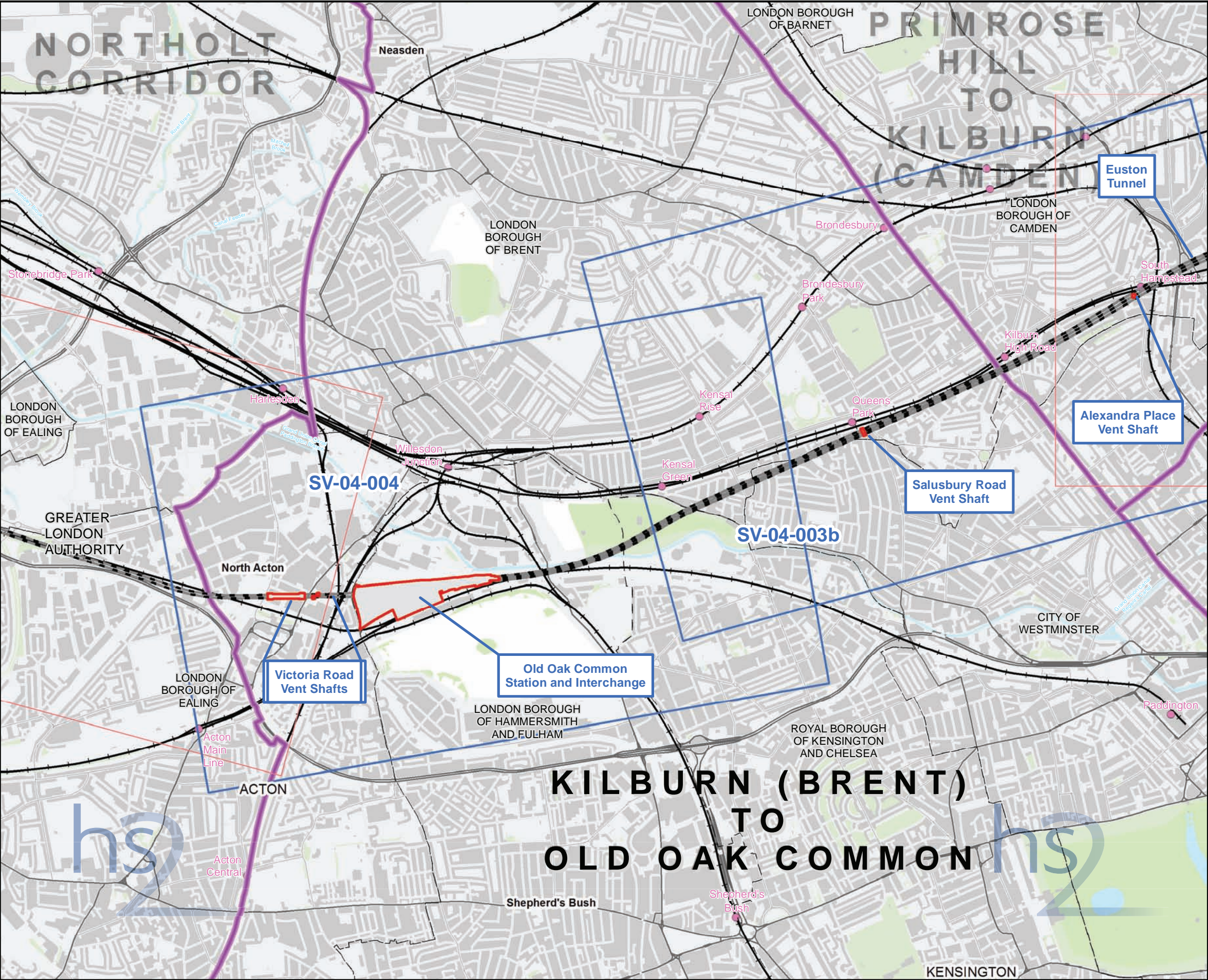
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Map Series Information:

The SV-04 figure series shows the locations at which a quantitative assessment of the direct effects of operational sound and/or vibration has been carried out. These are labelled as assessment locations with a reference number to enable cross-reference to the operational sound and vibration reports contained in Volume 5: Appendix SV-004 and Volume 5: Appendix SV-002.

The figure series also shows locations at which baseline sound measurements were carried out. These baseline measurement locations are labelled with a reference number to enable cross-reference to the baseline sound reports contained in Volume 5: Appendix SV-002.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

- Main Map Legend**
- Route in tunnel
 - Route on surface
 - Depot, station, headhouse or portal building
 - Community forum boundary
 - Existing railway station
 - County boundary
 - District/Borough boundary

- Map sheets included in this community forum
- Map sheets not included in this community forum

| | |
|------------|--------------------------------------------------------------------------------------------------------------|
| Map Number | SV-04-INDEX-CFA4 |
| Map Name | Index Map of: Assessment and Monitoring Locations for Operational Sound, Noise & Vibration Assessments |
| | Community Forum Area CFA4: Kilburn (Brent) to Old Oak Common |



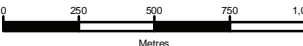
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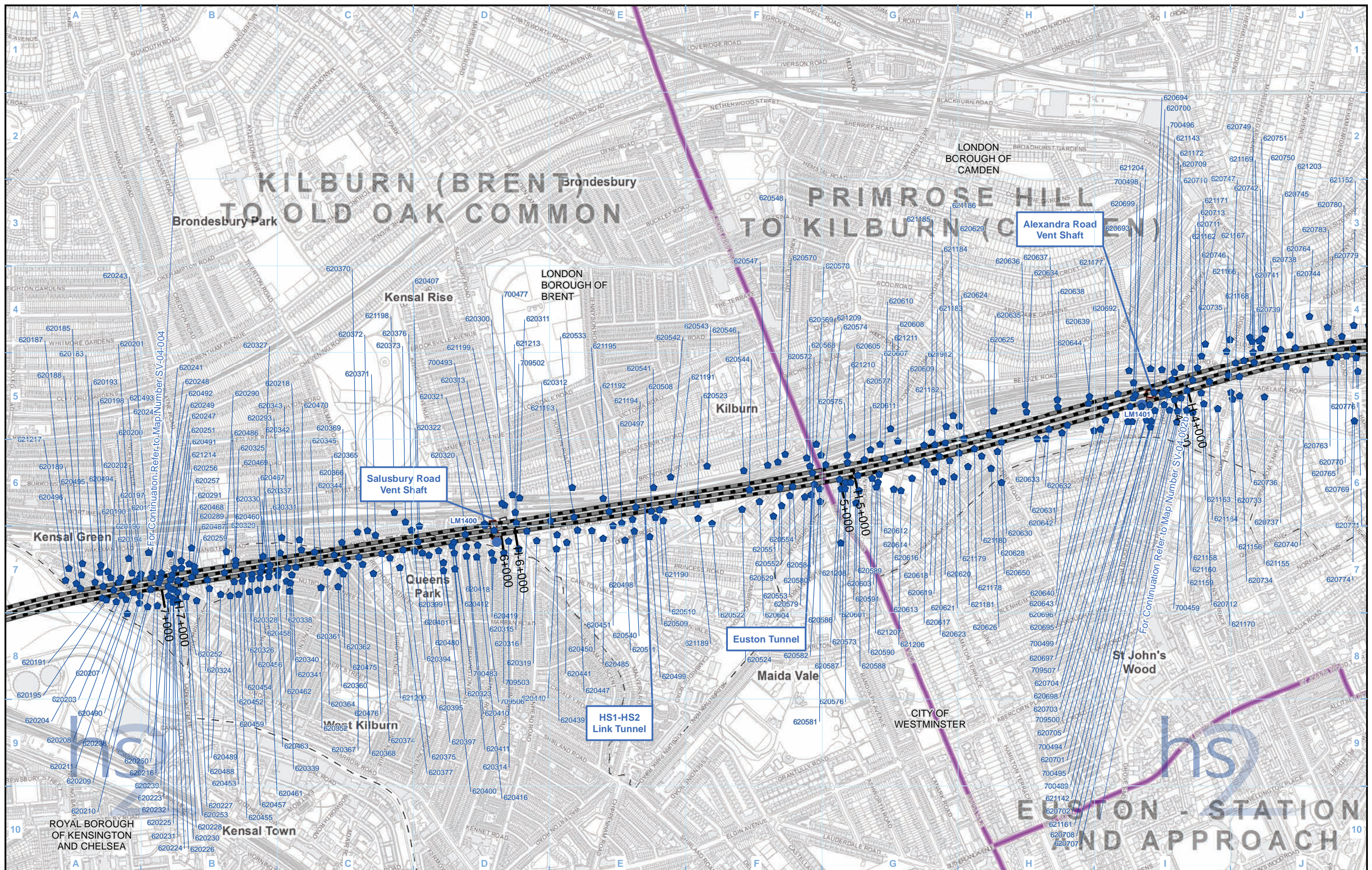


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Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

Legend - Sound related features

- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Baseline measurement locations

labelled with Assessment Location ID reference number (for details of the assessment results see Vol 5 Appendix SV004)

(labelled with Measurement Location reference code)

Map Number SV-04-003b

Map Name Assessment and Monitoring Locations for Operational Sound, Noise & Vibration Assessments

Community Forum Area CFA04: Kilburn (Brent) to Old Oak Common

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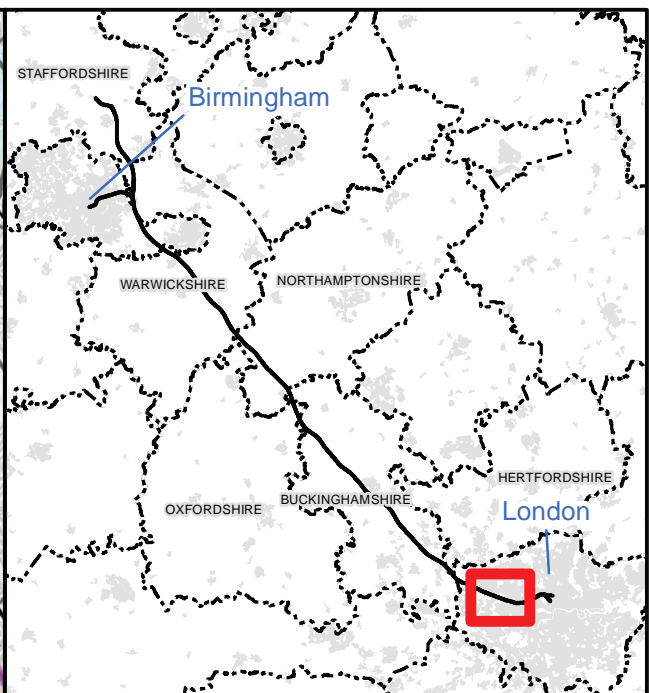
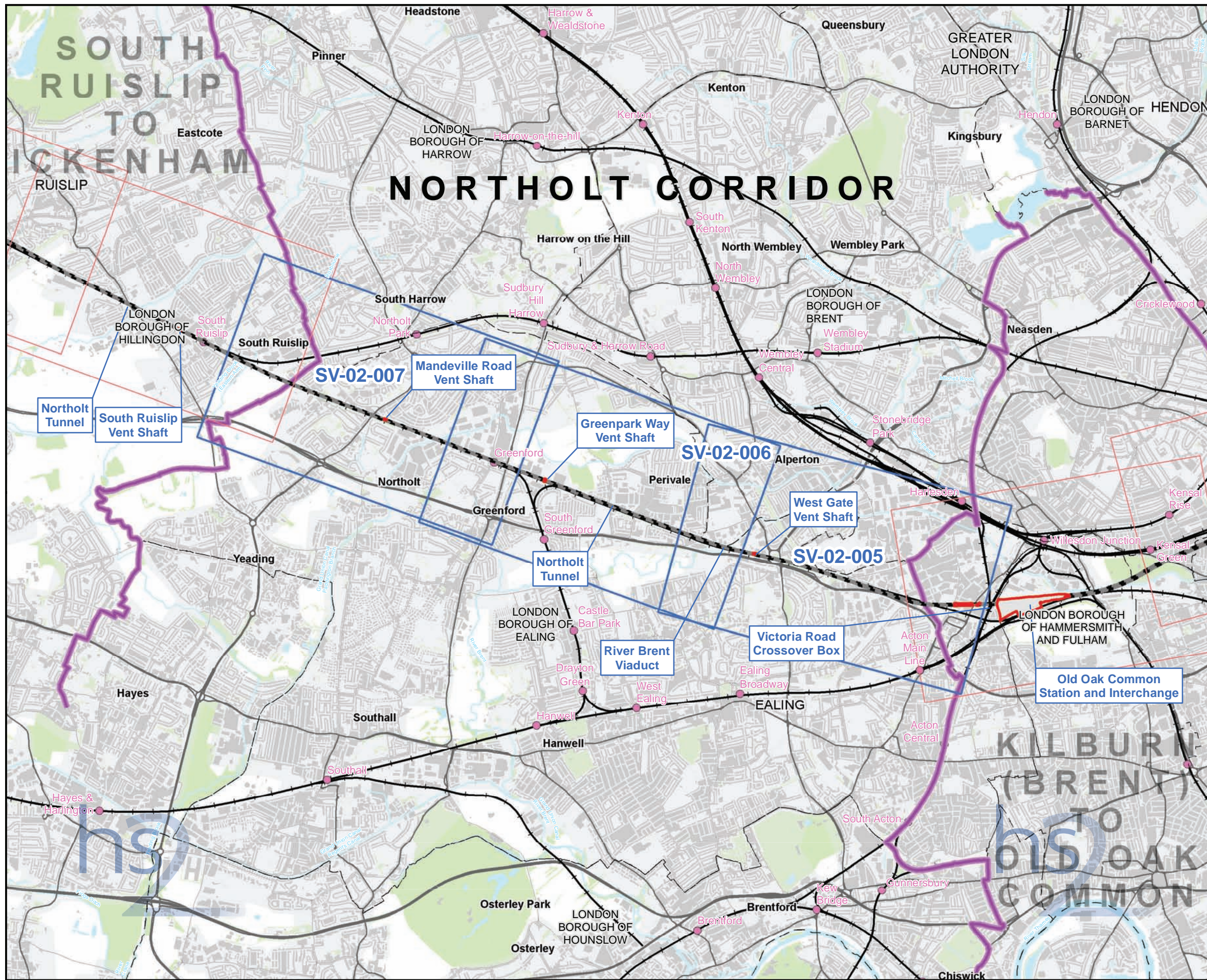
LONDON-WEST MIDLANDS ENVIRONMENTAL STATEMENT

CFA5 | Northolt Corridor

SV-02 - Operational Airborne Noise and Vibration Impacts and Likely Significant Effects
(with Assessment Locations)

SV-03 - Assessment and Monitoring Locations for Construction Sound, Noise & Vibration Assessments

SV-04 - Assessment and Monitoring Locations for Operational Sound, Noise & Vibration Assessments



Map Series Information:

SV-02 presents the direct operational noise impacts and likely significant effects of the Proposed Scheme.

The SV-02 figure series necessarily contains a large amount of information relating to the operational noise and vibration assessment. It is designed to communicate visually the assessment process from the prediction of impacts to the determination of likely residual significant effects. The corresponding text is included in Vol2 and Vol5.

Key items on the map include the following:


- The Proposed Scheme (the proposed railway alignments and surrounding associated earthworks/roads);
- blue and green lines representing the wayside airborne noise mitigation measures included in the Proposed Scheme;
- the study areas, which indicate the areas within which direct sound and vibration impacts of the scheme have been quantitatively assessed;
- the calculated direct operational impacts of the scheme, displayed as colour-coded buildings and symbols representing buildings that would potentially qualify for noise insulation;
- sound contours representing sound produced by the new railway (displayed in a simpler manner than on SV-01 in order not to obscure other features on the map series);
- the assessment locations at which a quantitative prediction of sound and impacts have been carried out (representing a number of nearby buildings). These are labelled with a unique reference number to enable cross-reference to further detail regarding the assessments in Volume 5: Appendix SV-004; and
- labels indicating where the likely residual direct noise or vibration significant effects have been identified. These are labelled with a unique reference number to enable cross-reference to further detail regarding the assessments in Volume 5: Appendix SV-004.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.


Note: Not all data layers in the legend are represented on every map.

| | |
|----------------------------------------------|-------------------------------------------------|
| Main Map Legend | |
| Route in tunnel | Map sheets included in this community forum |
| Route on surface | Map sheets not included in this community forum |
| Depot, station, headhouse or portal building | |
| Community forum boundary | |
| Existing railway station | |
| County boundary | |
| District/Borough boundary | |


| | |
|------------|---------------------------------------------------------------------------------------------------------------------|
| Map Number | SV-02-INDEX-CFA5 |
| Map Name | Index Map of: Operational Noise and Vibration Impacts and Likely Significant Effects (with Assessment Locations) |
| | Community Forum Area CFA5: Northolt Corridor |



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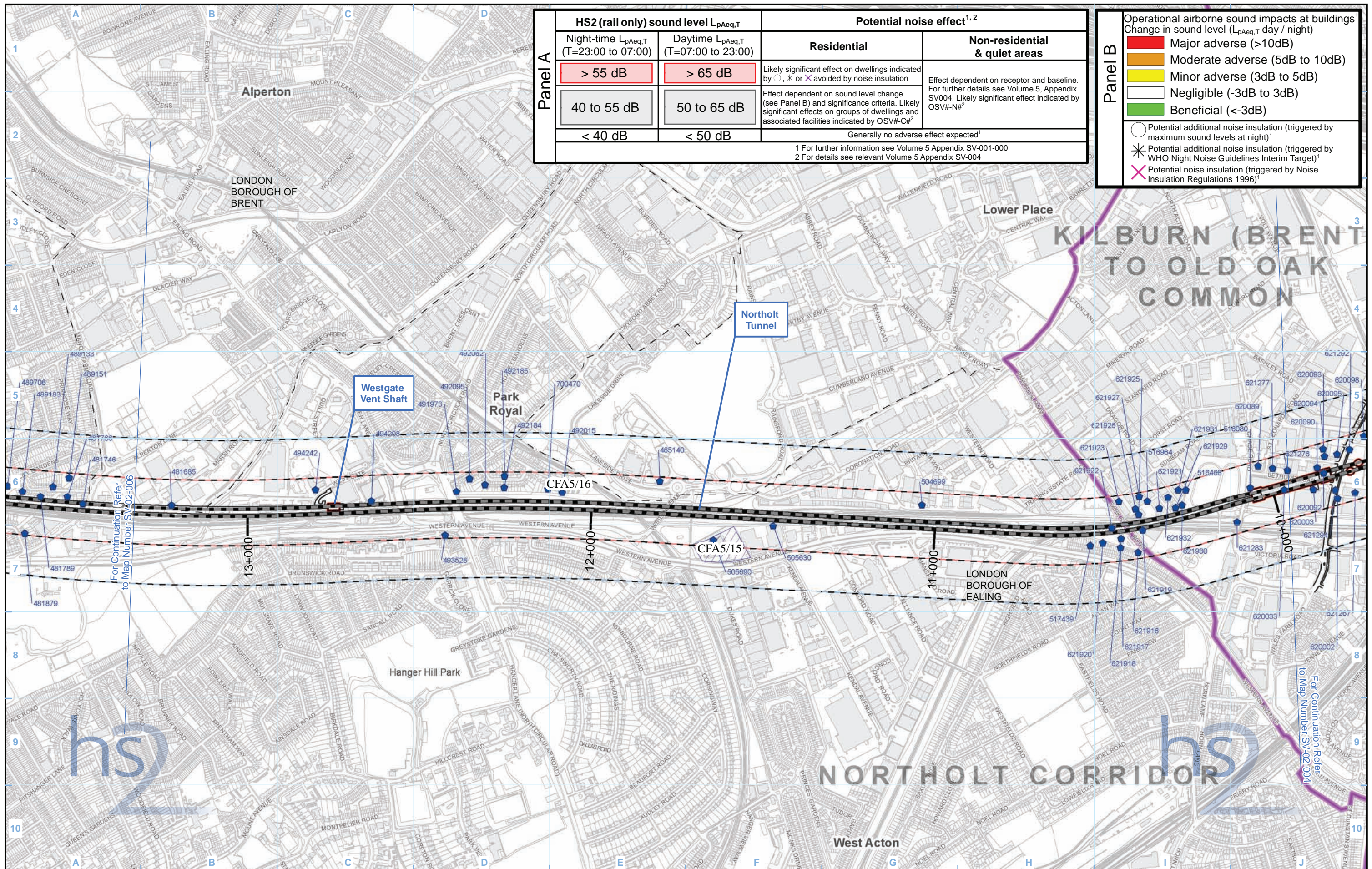
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Date: 29/10/13



| Panel A | HS2 (rail only) sound level $L_{pAeq,T}$ | | Potential noise effect ^{1, 2} | |
|---------|-------------------------------------------------------------------------------------------------------------------|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| | Night-time $L_{pAeq,T}$ (T=23:00 to 07:00) | Daytime $L_{pAeq,T}$ (T=07:00 to 23:00) | Residential | Non-residential & quiet areas |
| | > 55 dB | > 65 dB | Likely significant effect on dwellings indicated by ○, ✱ or ✕ avoided by noise insulation | Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# ² |
| | 40 to 55 dB | 50 to 65 dB | Effect dependent on sound level change (see Panel B) and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C# ² | |
| | < 40 dB | < 50 dB | Generally no adverse effect expected ¹ | |
| | 1 For further information see Volume 5 Appendix SV-001-000 2 For details see relevant Volume 5 Appendix SV-004 | | | |

| Panel B | Operational airborne sound impacts at buildings ⁴ Change in sound level ($L_{pAeq,T}$ day / night) | |
|---------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|--|
| | Major adverse (>10dB) | |
| | Moderate adverse (5dB to 10dB) | |
| | Minor adverse (3dB to 5dB) | |
| | Negligible (-3dB to 3dB) | |
| Beneficial (<-3dB) | | |
| ○ Potential additional noise insulation (triggered by maximum sound levels at night) ¹ | | |
| ✱ Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target) ¹ | | |
| ✕ Potential noise insulation (triggered by Noise Insulation Regulations 1996) ¹ | | |

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

+ Residential buildings only

* Labelled with total barrier height above rail level

Legend - Sound related features

- Committed developments (labelled as CFA#/#)
- Envisaged mitigation to avoid / reduce significant noise effects:
 - Landscaping and/or fence barriers*
 - Engineering e.g. cuttings (green tunnels separately marked)
- Envisaged measures further reducing noise effects:
 - Other environmental features e.g. landscaping
 - Engineering e.g. cuttings
- Airborne sound study area

- Ground-borne sound & vibration study area (residential and non-residential)
- Ground-borne sound & vibration study area (highly sensitive non-residential)
- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Minor ground-borne noise or vibration impact*

Map Number

SV-02-005

Map Name

Operational Noise and Vibration Impacts and Likely Significant Effects (with Assessment Locations)

Community Forum Area CFA05: Northolt Corridor

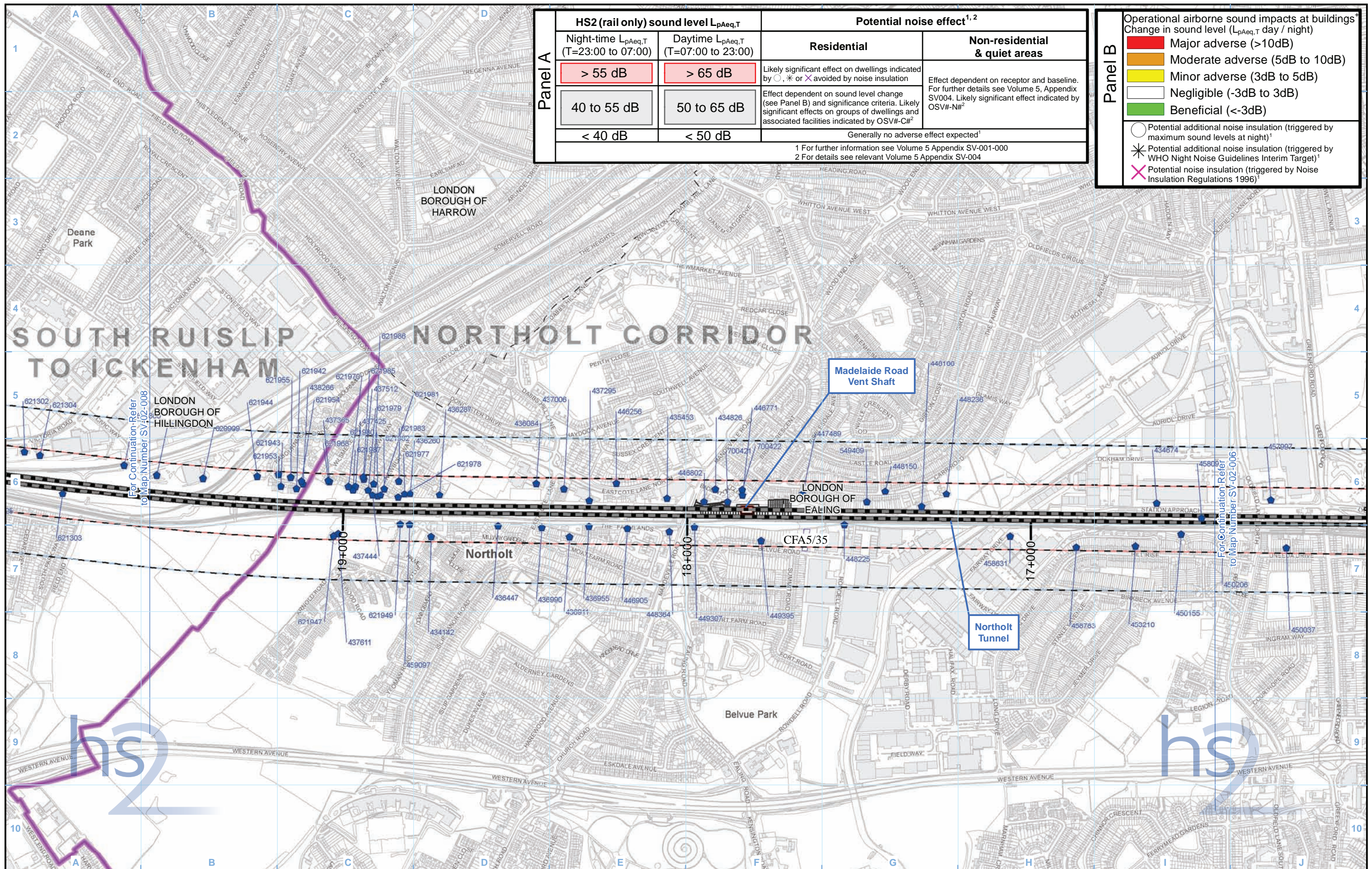
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Scale at A3: 1:10,000

0 100 200 300 400 Metres

Doc Number: C250-ARP-EV-MAP-000-003657

Date: 29/10/13



| Panel A | HS2 (rail only) sound level $L_{pAeq,T}$ | | Potential noise effect ^{1, 2} | |
|---------|-------------------------------------------------------------------------------------------------------------------|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| | Night-time $L_{pAeq,T}$ (T=23:00 to 07:00) | Daytime $L_{pAeq,T}$ (T=07:00 to 23:00) | Residential | Non-residential & quiet areas |
| | > 55 dB | > 65 dB | Likely significant effect on dwellings indicated by ○, ✱ or ✕ avoided by noise insulation | Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# ² |
| | 40 to 55 dB | 50 to 65 dB | Effect dependent on sound level change (see Panel B) and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C# ² | |
| | < 40 dB | < 50 dB | Generally no adverse effect expected ¹ | |
| | 1 For further information see Volume 5 Appendix SV-001-000 2 For details see relevant Volume 5 Appendix SV-004 | | | |

| Panel B | Operational airborne sound impacts at buildings ⁴ Change in sound level ($L_{pAeq,T}$ day / night) | |
|---------|-------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| | Major adverse (>10dB) | |
| | Moderate adverse (5dB to 10dB) | |
| | Minor adverse (3dB to 5dB) | |
| | Negligible (-3dB to 3dB) | |
| | | Beneficial (<-3dB) |
| | | ○ Potential additional noise insulation (triggered by maximum sound levels at night) ¹ |
| | | ✱ Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target) ¹ |
| | | ✕ Potential noise insulation (triggered by Noise Insulation Regulations 1996) ¹ |

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

+ Residential buildings only

* Labelled with total barrier height above rail level

Legend - Sound related features

- Committed developments (labelled as CFA#/#)
- Envisaged mitigation to avoid / reduce significant noise effects:
 - Landscaping and/or fence barriers*
 - Engineering e.g. cuttings (green tunnels separately marked)
- Envisaged measures further reducing noise effects:
 - Other environmental features e.g. landscaping
 - Engineering e.g. cuttings
- Airborne sound study area

- Ground-borne sound & vibration study area (residential and non-residential)
- Ground-borne sound & vibration study area (highly sensitive non-residential)
- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Minor ground-borne noise or vibration impact*

Map Number

SV-02-007

Map Name

Operational Noise and Vibration Impacts and Likely Significant Effects (with Assessment Locations)

Community Forum Area CFA05: Northolt Corridor

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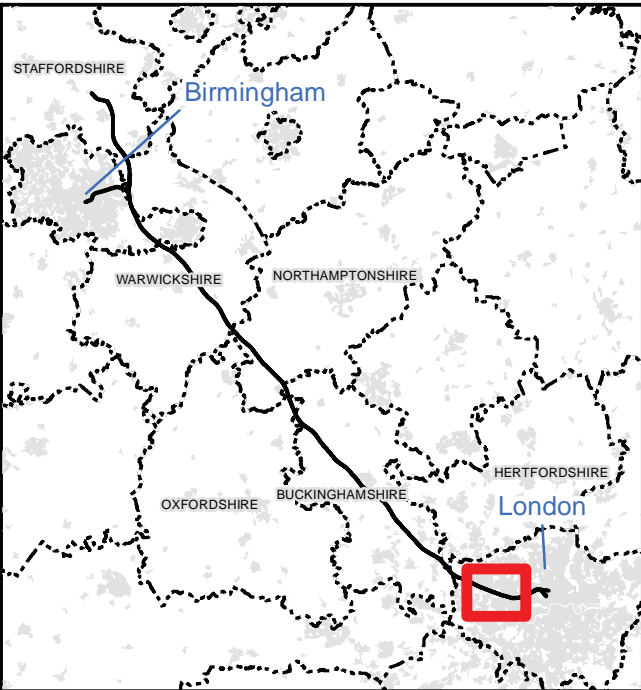
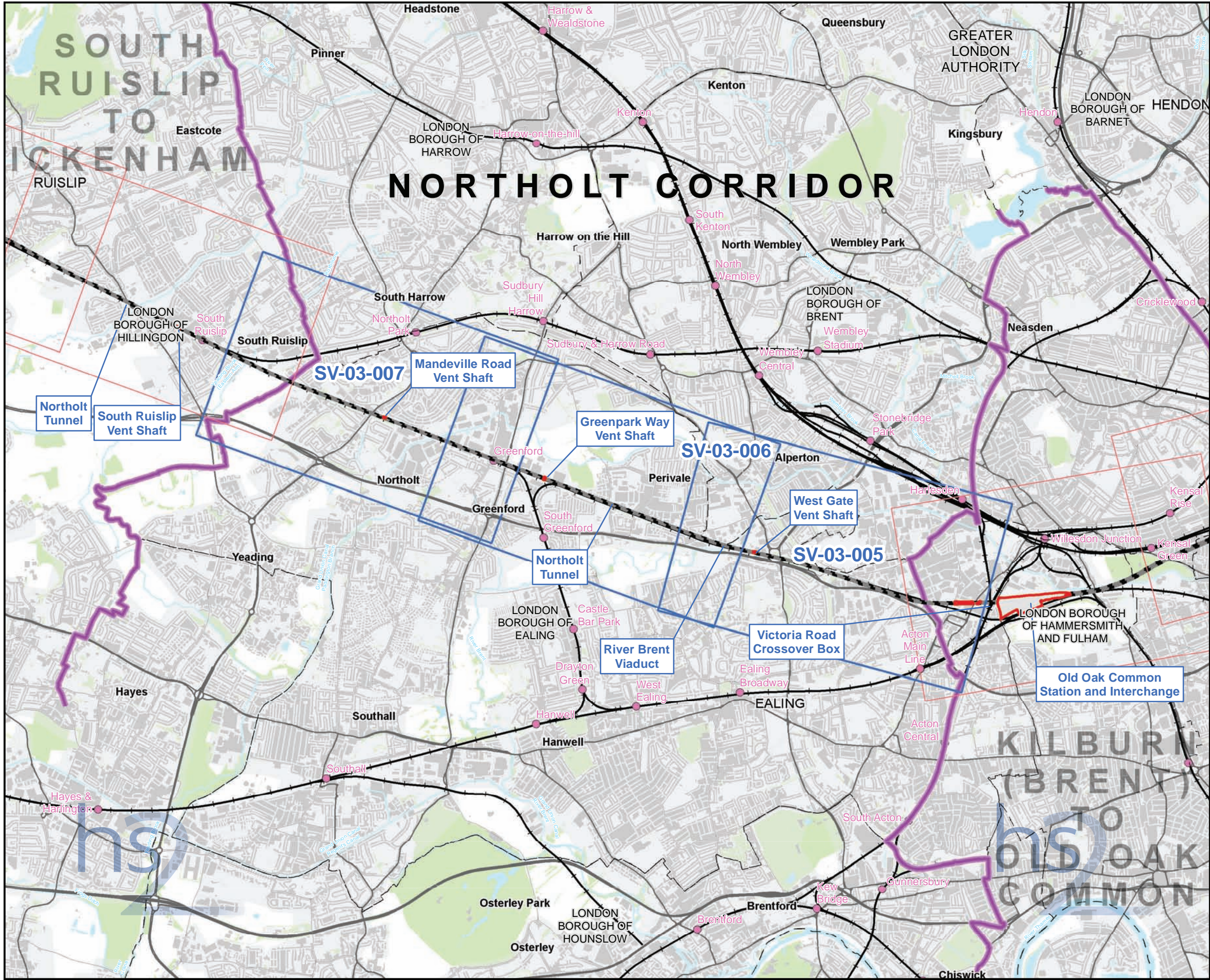
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Doc Number: C250-ARP-EV-MAP-000-003659

Scale at A3: 1:10,000

0 100 200 300 400 Metres

Date: 29/10/13



Map Series Information:

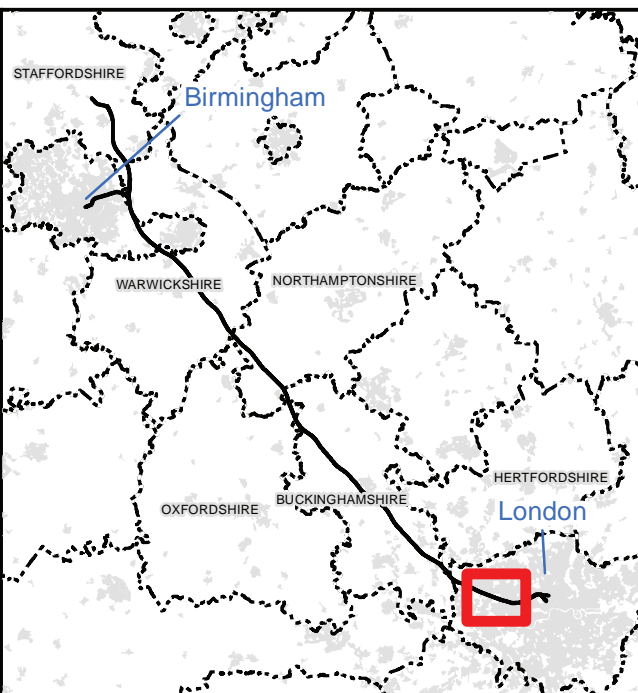
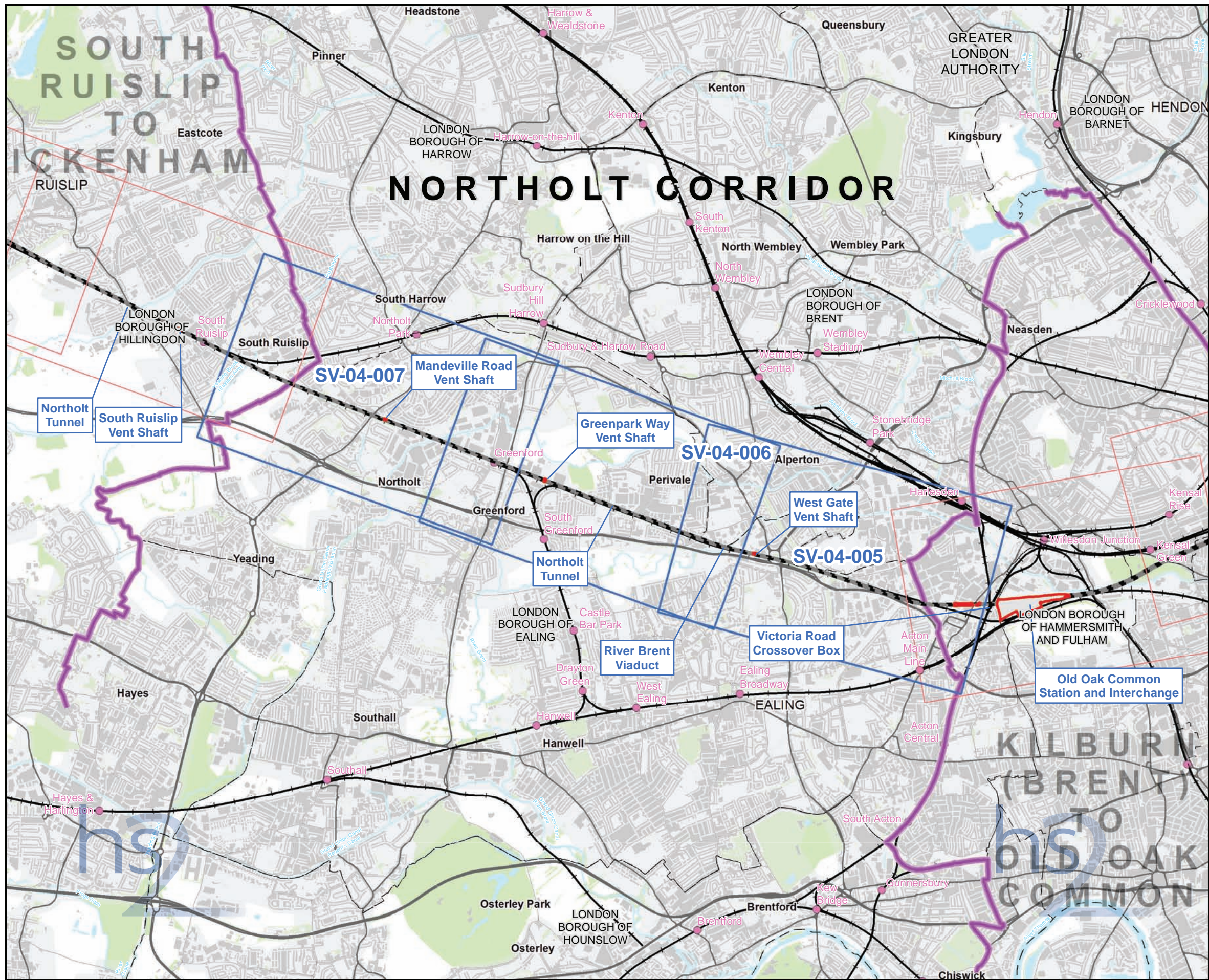
The SV-03 figure series accompanies the construction noise & vibration assessments. It shows the locations at which a quantitative assessment of the direct effects of construction noise and/or vibration has been carried out. These are labelled as assessment locations with a reference number to enable cross-reference to the construction noise and vibration reports contained in Volume 5: Appendix SV-003 and Volume 5: Appendix SV-002.

The figure series also shows locations at which baseline sound measurements were carried out. These baseline measurement locations are labelled with a reference number to enable cross-reference to the baseline sound reports contained in Volume 5: Appendix SV-002.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

| | | | | | | | | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------------|----------|---------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Main Map Legend <ul style="list-style-type: none">Route in tunnelRoute on surfaceDepot, station, headhouse or portal buildingCommunity forum boundaryExisting railway stationCounty boundaryDistrict/Borough boundary | <ul style="list-style-type: none">Map sheets included in this community forumMap sheets not included in this community forum | <table><tr><td>Map Number</td><td>SV-03-INDEX-CFA5</td></tr><tr><td>Map Name</td><td>Index Map of: Assessment and Monitoring Locations for Construction Sound, Noise & Vibration Assessments</td></tr><tr><td></td><td>Community Forum Area CFA5: Northolt Corridor</td></tr></table> | Map Number | SV-03-INDEX-CFA5 | Map Name | Index Map of: Assessment and Monitoring Locations for Construction Sound, Noise & Vibration Assessments | | Community Forum Area CFA5: Northolt Corridor | <div></div> <div>HS2 Ltd accept no responsibility for any circumstances, which arise from the reproduction of this map after alteration, amendment or abbreviation or if it is issued in part or issued incomplete in any way.</div> <div></div> <div>Registered in England. Registration number 06791686. Registered office: Eland House, Bressenden Place, London SW1E 5DU.</div> <div>© Crown copyright and database rights 2013 Ordnance Survey Licence Number 100049190.</div> <div>Scale at A3: 1:50,000</div> <div></div> <div>Doc Number: C250-ARP-EV-MAP-000-004113-P06.00</div> <div>Date: 29/10/13</div> |
| Map Number | SV-03-INDEX-CFA5 | | | | | | | | |
| Map Name | Index Map of: Assessment and Monitoring Locations for Construction Sound, Noise & Vibration Assessments | | | | | | | | |
| | Community Forum Area CFA5: Northolt Corridor | | | | | | | | |



Map Series Information:

The SV-04 figure series shows the locations at which a quantitative assessment of the direct effects of operational sound and/or vibration has been carried out. These are labelled as assessment locations with a reference number to enable cross-reference to the operational sound and vibration reports contained in Volume 5: Appendix SV-004 and Volume 5: Appendix SV-002.

The figure series also shows locations at which baseline sound measurements were carried out. These baseline measurement locations are labelled with a reference number to enable cross-reference to the baseline sound reports contained in Volume 5: Appendix SV-002.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

| | |
|----------------------------------------------|-------------------------------------------------|
| Main Map Legend | |
| Route in tunnel | Map sheets included in this community forum |
| Route on surface | Map sheets not included in this community forum |
| Depot, station, headhouse or portal building | |
| Community forum boundary | |
| Existing railway station | |
| County boundary | |
| District/Borough boundary | |

| | |
|------------|--------------------------------------------------------------------------------------------------------------|
| Map Number | SV-04-INDEX-CFA5 |
| Map Name | Index Map of: Assessment and Monitoring Locations for Operational Sound, Noise & Vibration Assessments |
| | Community Forum Area CFA5: Northolt Corridor |

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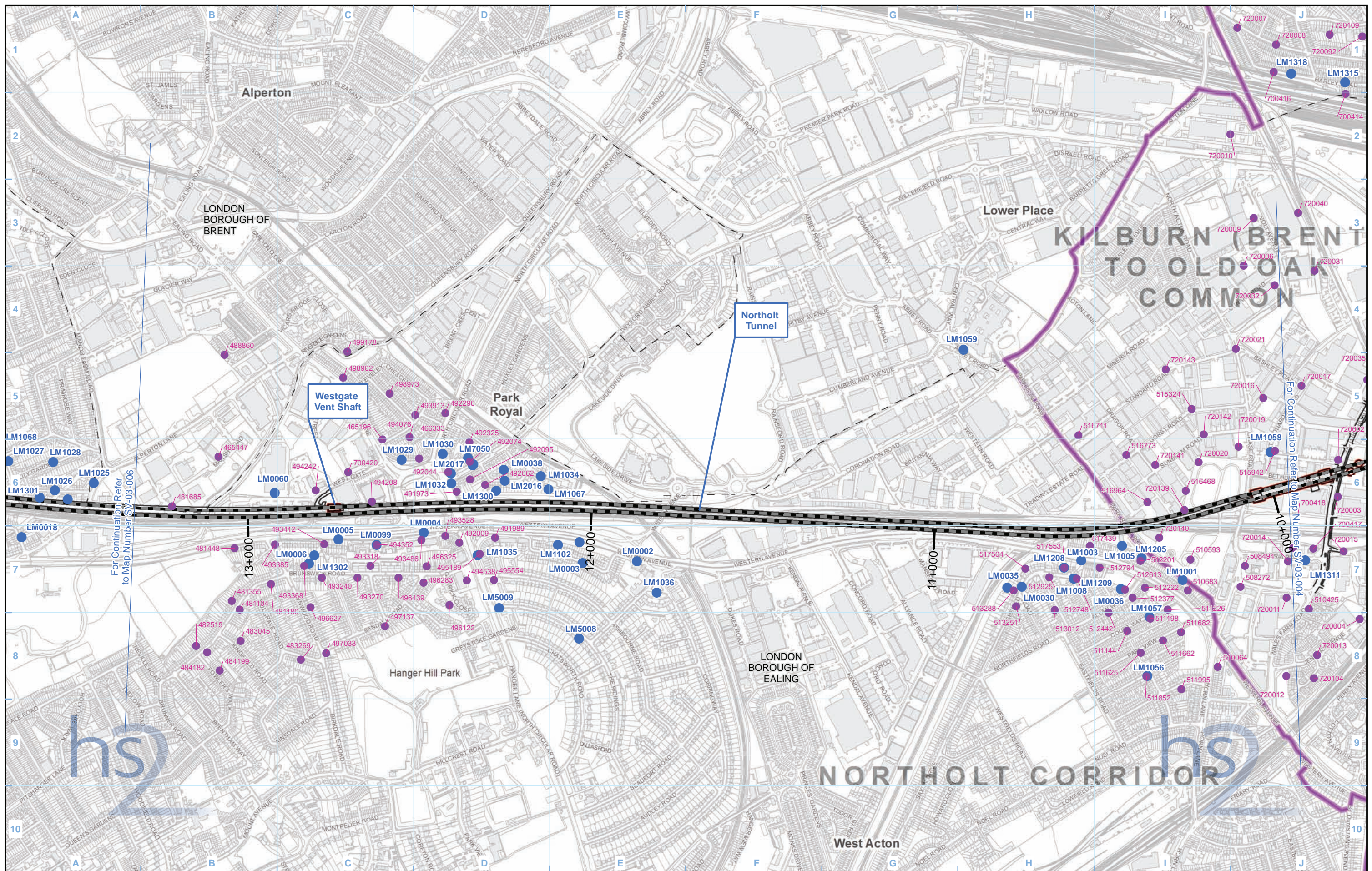
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Date: 29/10/13



Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

- Engineering earthworks:
- Embankment
 - Cutting
- Non engineering earthworks:
- Embankment
 - Cutting


Legend - Sound related features

- Construction airborne sound assessment location
- Construction vibration assessment locations
- Construction airborne sound and vibration assessment location
- Baseline measurement locations

labelled with Assessment Location ID reference number
(for details of the assessment results see relevant Vol 5 Appendix SV-003)

(labelled with Measurement Location reference code)


| | |
|-----------------------------|-------------------------------------------------------------------------------------------|
| Map Number | SV-03-005 |
| Map Name | Assessment and Monitoring Locations for Construction Sound, Noise & Vibration Assessments |
| Community Forum Area CFA05: | Northolt Corridor |




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Doc Number: C250-ARP-EV-MAP-000-003758

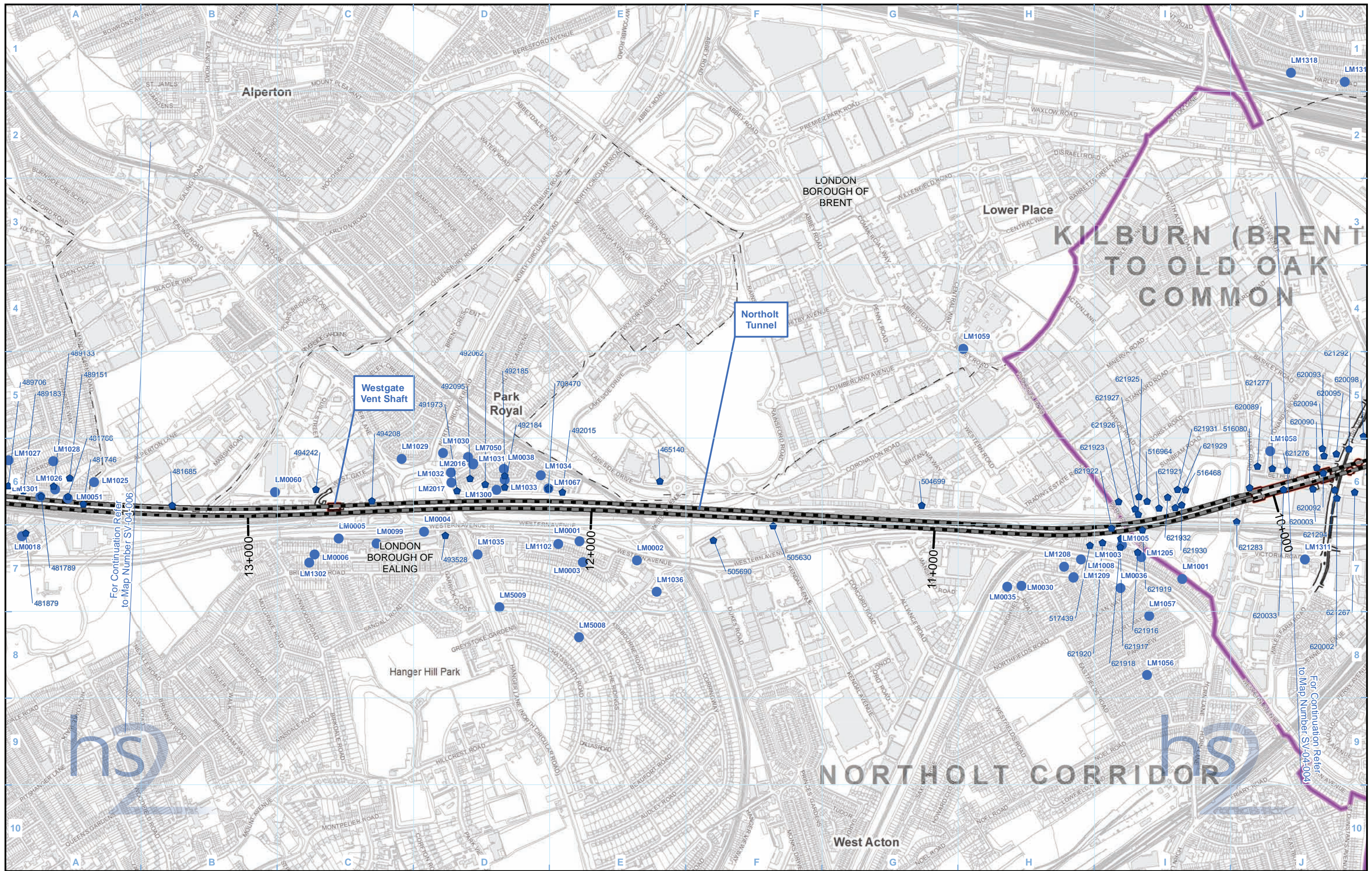


Scale at A3: 1:10,000



Metres

Date: 29/10/13



Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks: Non engineering earthworks:

- Embankment
- Cutting
- Embankment
- Cutting

Legend - Sound related features

- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Baseline measurement locations

labelled with Assessment Location ID reference number
(for details of the assessment results see Vol 5 Appendix SV004)

labelled with Measurement Location reference code

Map Number SV-04-005

Map Name Assessment and Monitoring Locations for Operational Sound, Noise & Vibration Assessments

Community Forum Area CFA05: Northolt Corridor

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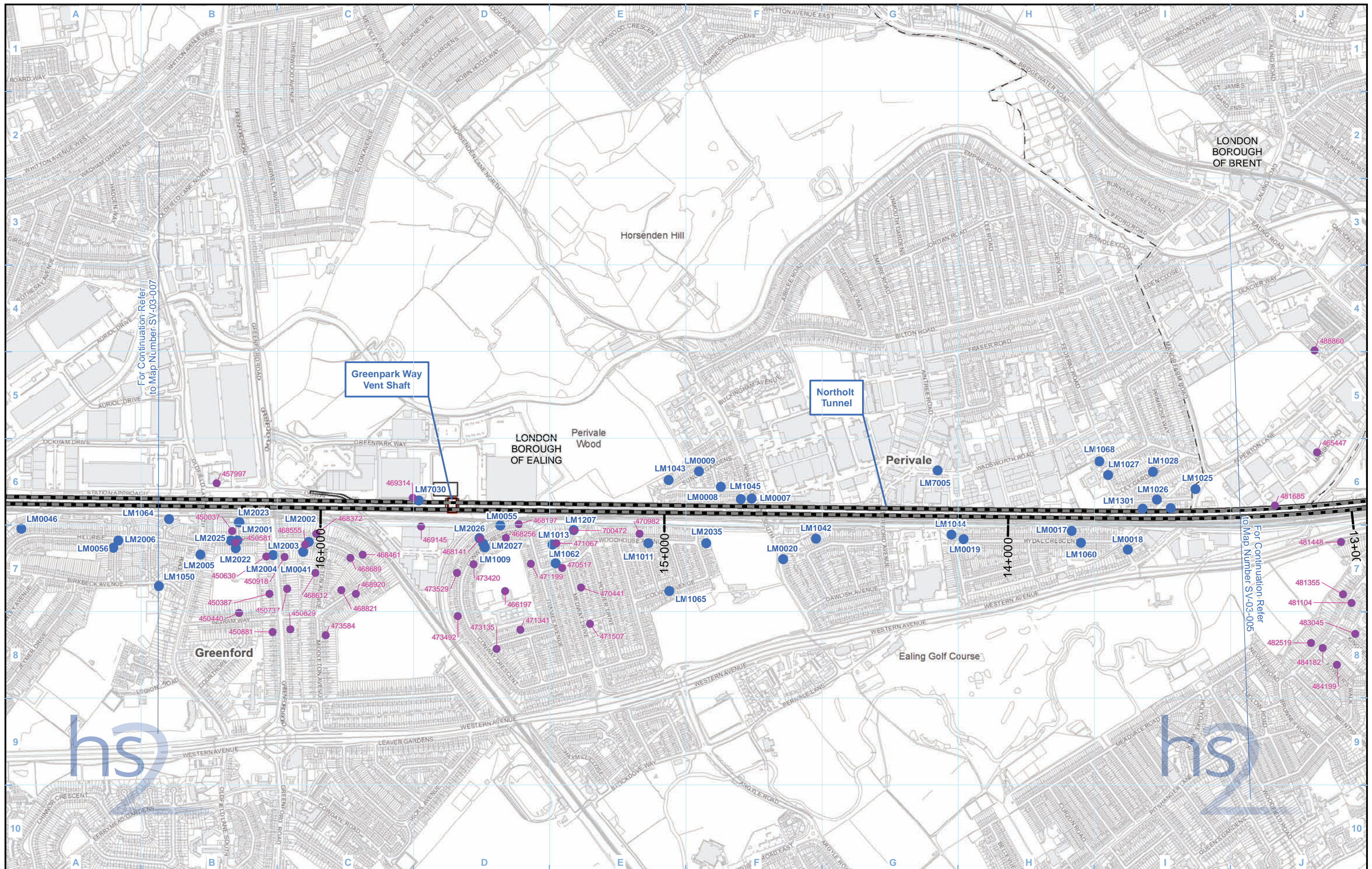
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Doc Number: C250-ARP-EV-MAP-000-003859

Date: 29/10/13



Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks: Non engineering earthworks:

- Embankment
- Cutting
- Embankment
- Cutting


Legend - Sound related features

- Construction airborne sound assessment location
- Construction vibration assessment locations
- Construction airborne sound and vibration assessment location
- Baseline measurement locations

labelled with Assessment Location ID reference number
(for details of the assessment results see relevant Vol 5 Appendix SV-003)

(labelled with Measurement Location reference code)

| | |
|--------------------------------------------------|-------------------------------------------------------------------------------------------|
| Map Number | SV-03-006 |
| Map Name | Assessment and Monitoring Locations for Construction Sound, Noise & Vibration Assessments |
| Community Forum Area CFA05: Northolt Corridor | |




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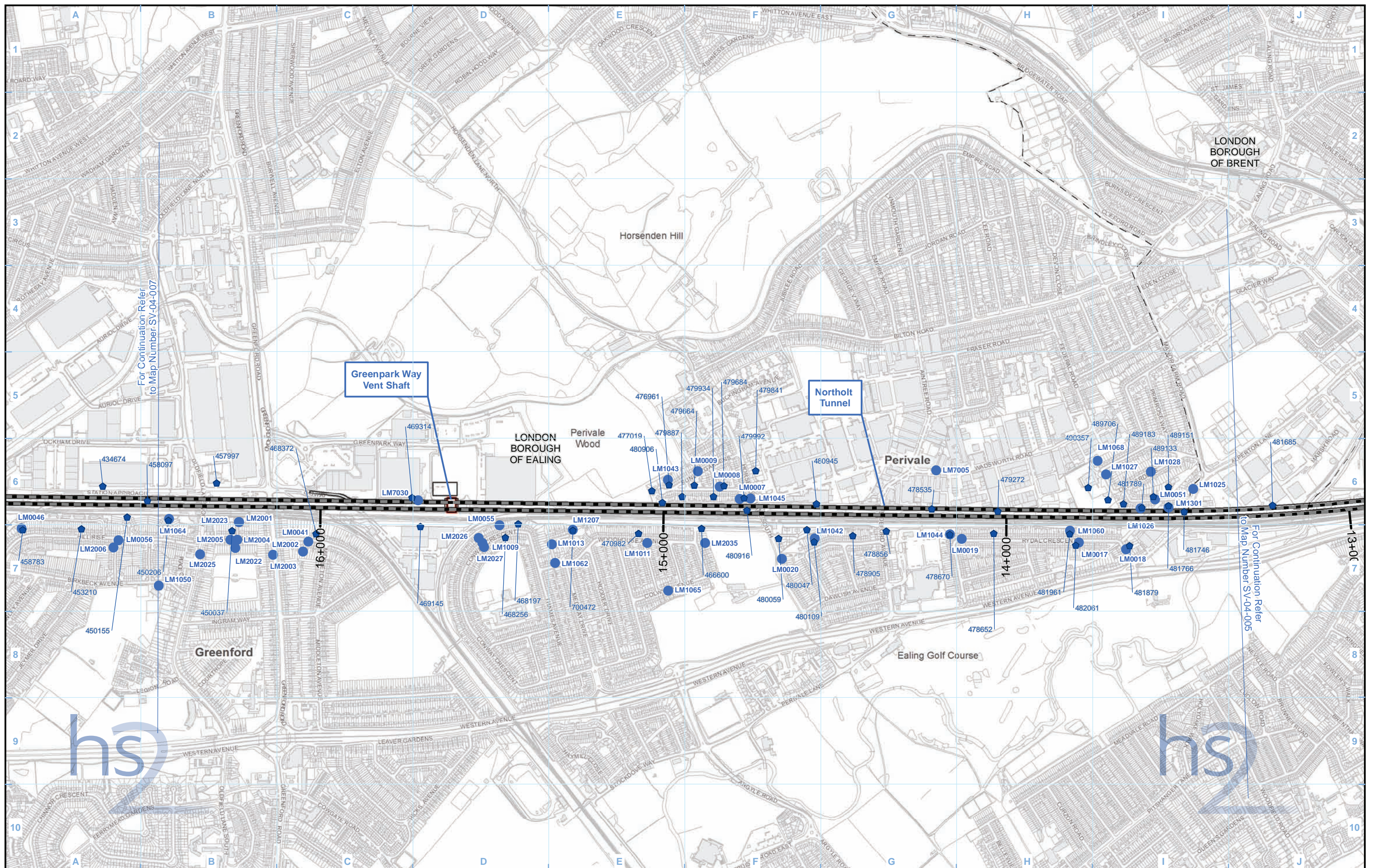


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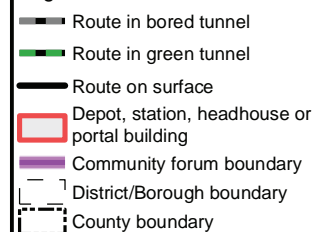


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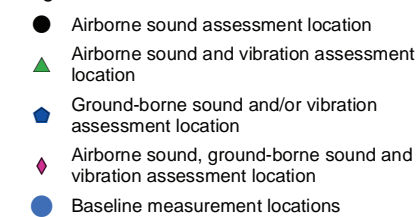
Date: 29/10/13



Legend - General features



Legend - Sound related features



labelled with Assessment Location ID reference number
(for details of the assessment results see Vol 5 Appendix SV004)

(labelled with Measurement Location reference code)

| | |
|------------|--|
| Map Number | |
|------------|--|

SV-04-006

| Map Name |
|----------|
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Assessment and Monitoring Locations for Operational Sound, Noise & Vibration Assessments

Community Forum Area CFA05:
Northolt Corridor



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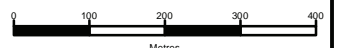


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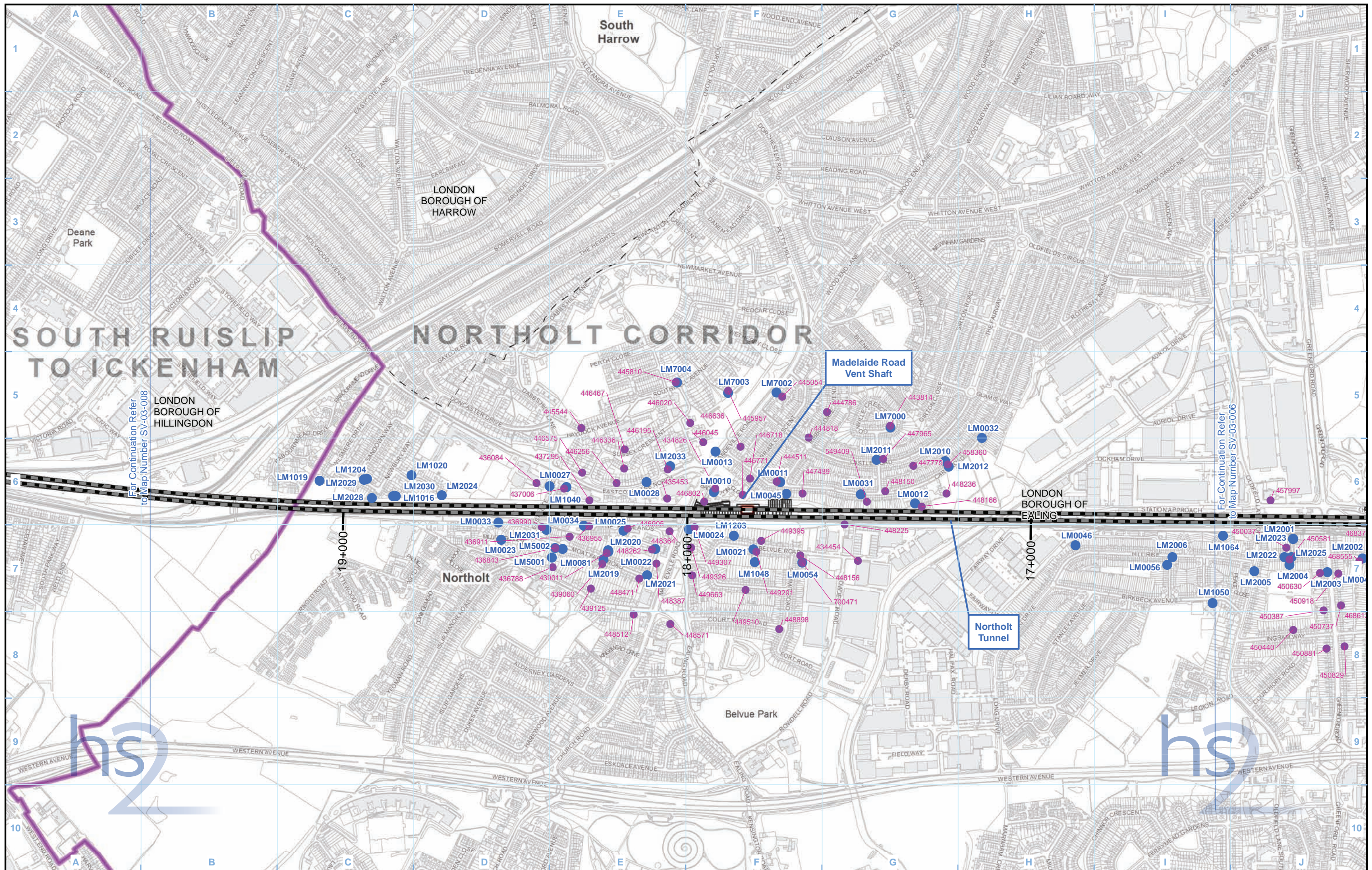
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Doc Number: C250-ARP-EV-MAP-000-003860

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Date: 29/10/13



Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks: Non engineering earthworks:

- Embankment
- Cutting
- Embankment
- Cutting

Legend - Sound related features

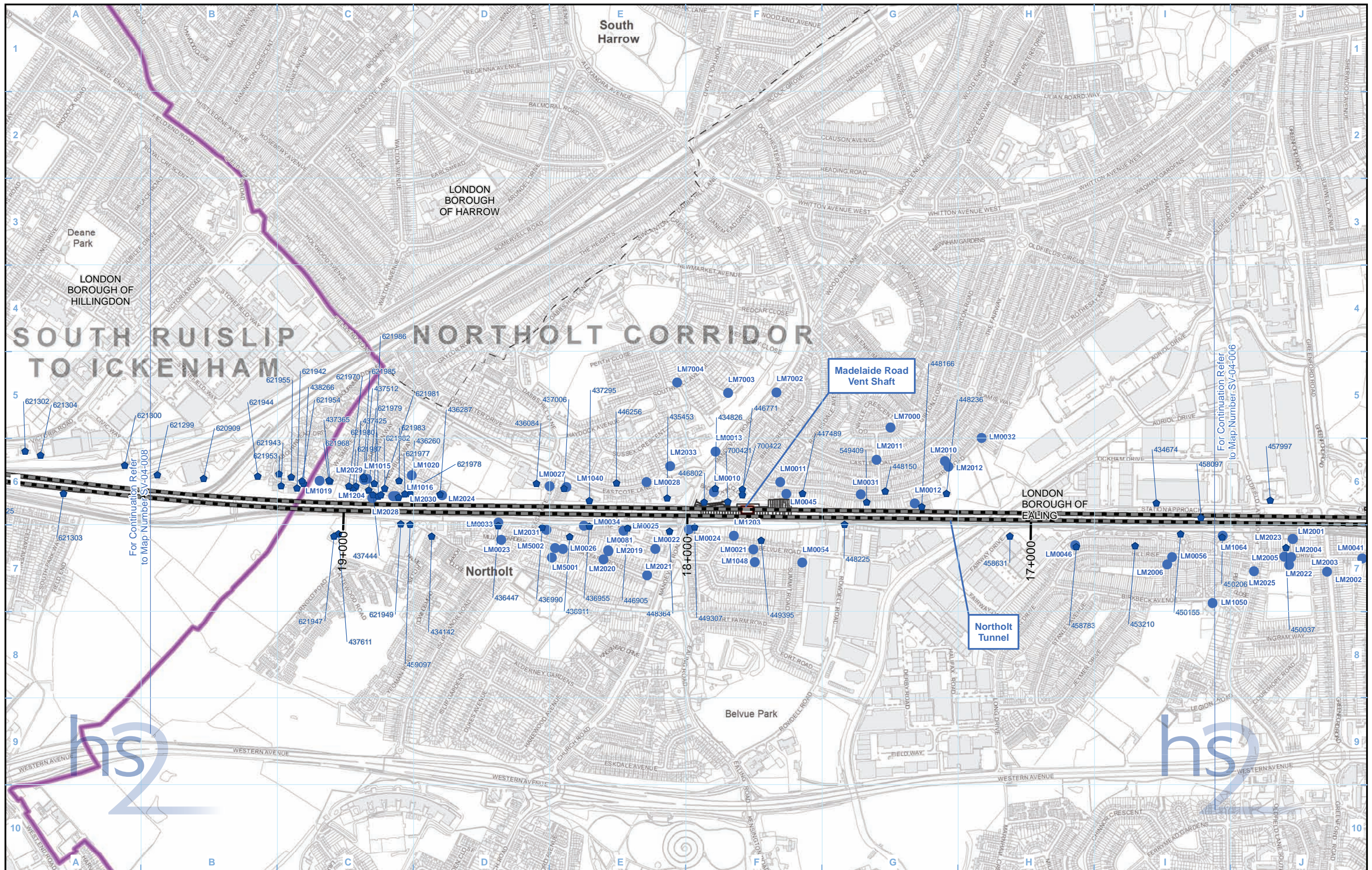
- Construction airborne sound assessment location
- Construction vibration assessment locations
- Construction airborne sound and vibration assessment location
- Baseline measurement locations

labelled with Assessment Location ID reference number
(for details of the assessment results see relevant Vol 5 Appendix SV-003)

(labelled with Measurement Location reference code)

| | |
|--------------------------------------------------|-------------------------------------------------------------------------------------------|
| Map Number | SV-03-007 |
| Map Name | Assessment and Monitoring Locations for Construction Sound, Noise & Vibration Assessments |
| Community Forum Area CFA05: Northolt Corridor | |

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| Doc Number: C250-ARP-EV-MAP-000-003760 | Date: 29/10/13 |



Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

- Engineering earthworks:
- Embankment
 - Cutting
- Non engineering earthworks:
- Embankment
 - Cutting


Legend - Sound related features

- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Baseline measurement locations

labelled with Assessment Location ID reference number
(for details of the assessment results see Vol 5 Appendix SV004)

(labelled with Measurement Location reference code)


| | |
|--------------------------------------------------|------------------------------------------------------------------------------------------|
| Map Number | SV-04-007 |
| Map Name | Assessment and Monitoring Locations for Operational Sound, Noise & Vibration Assessments |
| Community Forum Area CFA05: Northolt Corridor | |




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Scale at A3: 1:10,000



0 100 200 300 400 Metres

Date: 29/10/13

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LONDON-WEST MIDLANDS ENVIRONMENTAL STATEMENT

CFA6 | South Ruislip to Ickenham

SV-01 - Operational Sound Contour Maps and Likely Significant Effects

SV-02 - Operational Airborne Noise and Vibration Impacts and Likely Significant Effects
(with Assessment Locations)

SV-03 - Assessment and Monitoring Locations for Construction Sound, Noise & Vibration Assessments

SV-04 - Assessment and Monitoring Locations for Operational Sound, Noise & Vibration Assessments



Route in tunnel

Route on surface

Depot, station, headhouse or portal building

Community forum boundary

Existing railway station

County boundary

District/Borough boundary

Map sheets included in this community forum

Map sheets not included in this community forum

h2

Iver

West Drayton

Iver

Map Series Information:

SV-01 presents the predicted operational sound from the new railway.

The sound levels from the new railway (expressed as $L_{pAeq,T}$) are presented in typical noise mapping colours in 5 dB steps. There is a panel at the top right of the figure; the left-hand section of this panel contains a key communicating the night-time and daytime sound levels represented by the various colours. The right-hand part of the same panel contains text explaining how the sound levels presented on the figure inform the assessment of direct noise impacts and likely significant effects. A corresponding and similar panel is found on SV-02, along with the key sound contours that were used within the environmental assessment.

Also presented on SV-01 are the following (which are also included on SV-02):

- A representation of the Proposed Scheme, including the railway alignment (indicating whether it is on the surface or in tunnel), any new and altered roads and all associated engineering and environmental mitigation earthworks;
- blue and green lines representing the wayside airborne noise mitigation measures included in the Proposed Scheme;
- symbols representing buildings that would potentially qualify for noise insulation;
- labels identifying the residual likely significant noise effects of the Proposed Scheme, and
- the extent of the study area within which the direct impacts and effects of the scheme have been quantitatively assessed.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

Map Number

SV-01-INDEX-CFA6

Map Name

Index Map of:
Operational Sound Contour Maps and
Likely Significant Effects

Community Forum Area CFA6:
South Ruislip to Ickenham

h2

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1,000

1,500

2,000

Metres

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Doc Number: C250-ARP-EV-MAP-000-004063--P04.00

Date: 29/10/13



Route in tunnel

Route on surface

Depot, station, headhouse or portal building

Community forum boundary

Existing railway station

County boundary

District/Borough boundary

Map sheets included in this community forum

Map sheets not included in this community forum

Map Number

SV-02-INDEX-CFA6

Map Name

Index Map of:
Operational Noise and Vibration Impacts and Likely Significant Effects (with Assessment Locations)

Community Forum Area CFA6:

South Ruislip to Ickenham

Map Series Information:

SV-02 presents the direct operational noise impacts and likely significant effects of the Proposed Scheme.

The SV-02 figure series necessarily contains a large amount of information relating to the operational noise and vibration assessment. It is designed to communicate visually the assessment process from the prediction of impacts to the determination of likely residual significant effects. The corresponding text is included in Vol2 and Vol5.

Key items on the map include the following:

- The Proposed Scheme (the proposed railway alignments and surrounding associated earthworks/roads);
- blue and green lines representing the wayside airborne noise mitigation measures included in the Proposed Scheme;
- the study areas, which indicate the areas within which direct sound and vibration impacts of the scheme have been quantitatively assessed;
- the calculated direct operational impacts of the scheme, displayed as colour-coded buildings and symbols representing buildings that would potentially qualify for noise insulation;
- sound contours representing sound produced by the new railway (displayed in a simpler manner than on SV-01 in order not to obscure other features on the map series);
- the assessment locations at which a quantitative prediction of sound and impacts have been carried out (representing a number of nearby buildings). These are labelled with a unique reference number to enable cross-reference to further detail regarding the assessments in Volume 5: Appendix SV-004; and
- labels indicating where the likely residual direct noise or vibration significant effects have been identified. These are labelled with a unique reference number to enable cross-reference to further detail regarding the assessments in Volume 5: Appendix SV-004.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

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0

500

1,000

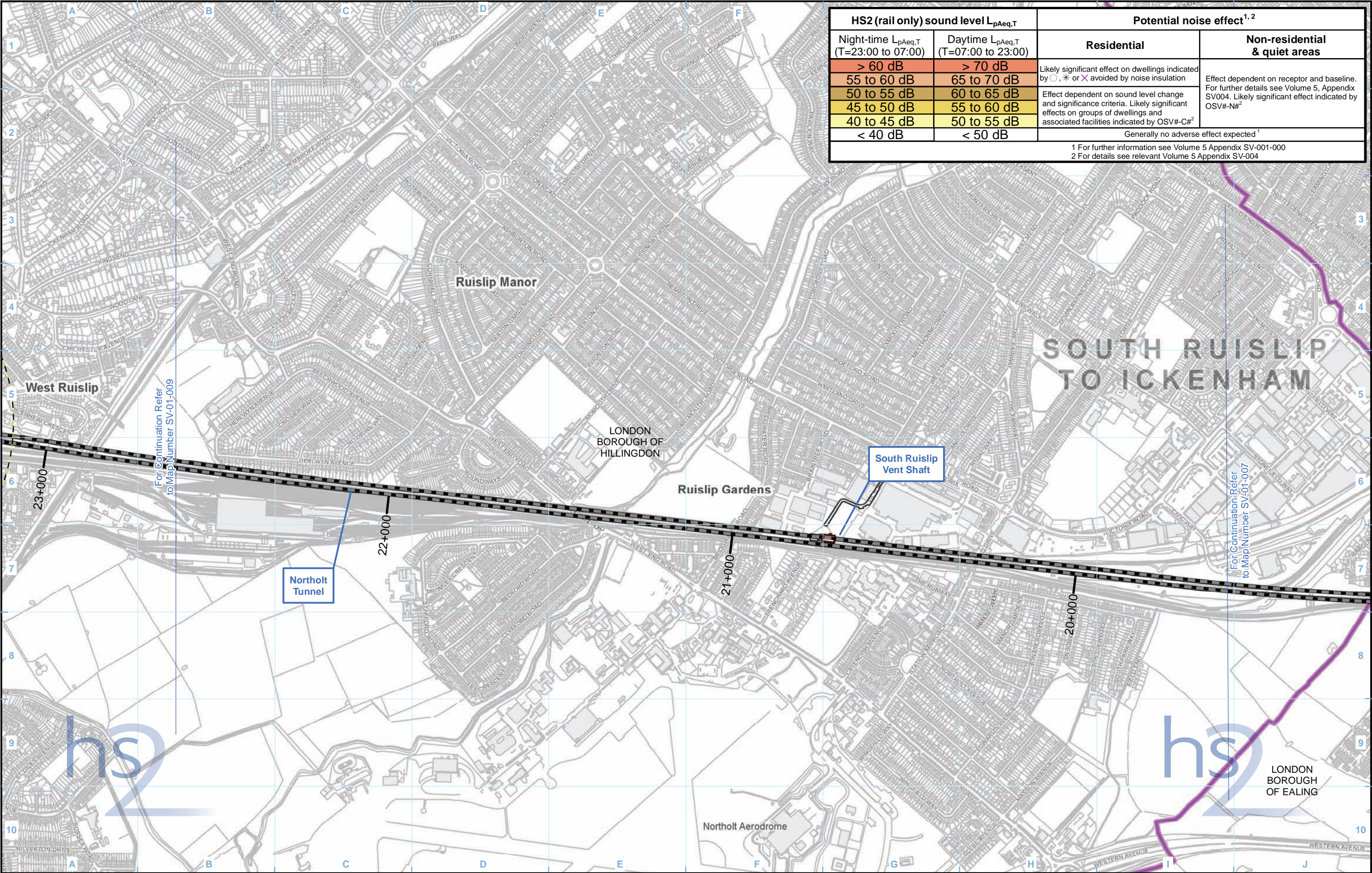
1,500

2,000

Metres

Doc Number: C250-ARP-EV-MAP-000-004088--P04.00

Date: 29/10/13



| HS2 (rail only) sound level $L_{pAeq,T}$ | | Potential noise effect ^{1, 2} | |
|-------------------------------------------------------------------------------------------------------------------|--------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Night-time $L_{pAeq,T}$ (T=23:00 to 07:00) | Daytime $L_{pAeq,T}$ (T=07:00 to 23:00) | Residential | Non-residential & quiet areas |
| > 60 dB | > 70 dB | Likely significant effect on dwellings indicated by ○, ✱ or ✕ avoided by noise insulation | Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# ² |
| 55 to 60 dB | 65 to 70 dB | | |
| 50 to 55 dB | 60 to 65 dB | Effect dependent on sound level change and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C# ² | |
| 45 to 50 dB | 55 to 60 dB | | |
| 40 to 45 dB | 50 to 55 dB | | |
| < 40 dB | < 50 dB | | |
| Generally no adverse effect expected ¹ | | | |
| 1 For further information see Volume 5 Appendix SV-001-000 2 For details see relevant Volume 5 Appendix SV-004 | | | |

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

Legend - Sound related features

- Envisaged mitigation to avoid / reduce significant noise effects:
- Landscaping and/or fence barriers*
- Engineering e.g. cuttings (green tunnels separately marked)
- Envisaged measures further reducing noise effects:
- Other environmental e.g. landscaping
- Engineering e.g. cuttings

- Airborne sound study area
- Potential additional noise insulation (triggered by maximum sound levels at night)¹
- Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)¹
- Potential noise insulation (triggered by Noise Insulation Regulations 1996)¹

* Labelled with total barrier height above rail level

Map Number
SV-01-008

Map Name
Operational Sound Contour Maps and Likely Significant Effects

Community Forum Area CFA06:
South Ruislip to Ickenham

hs2

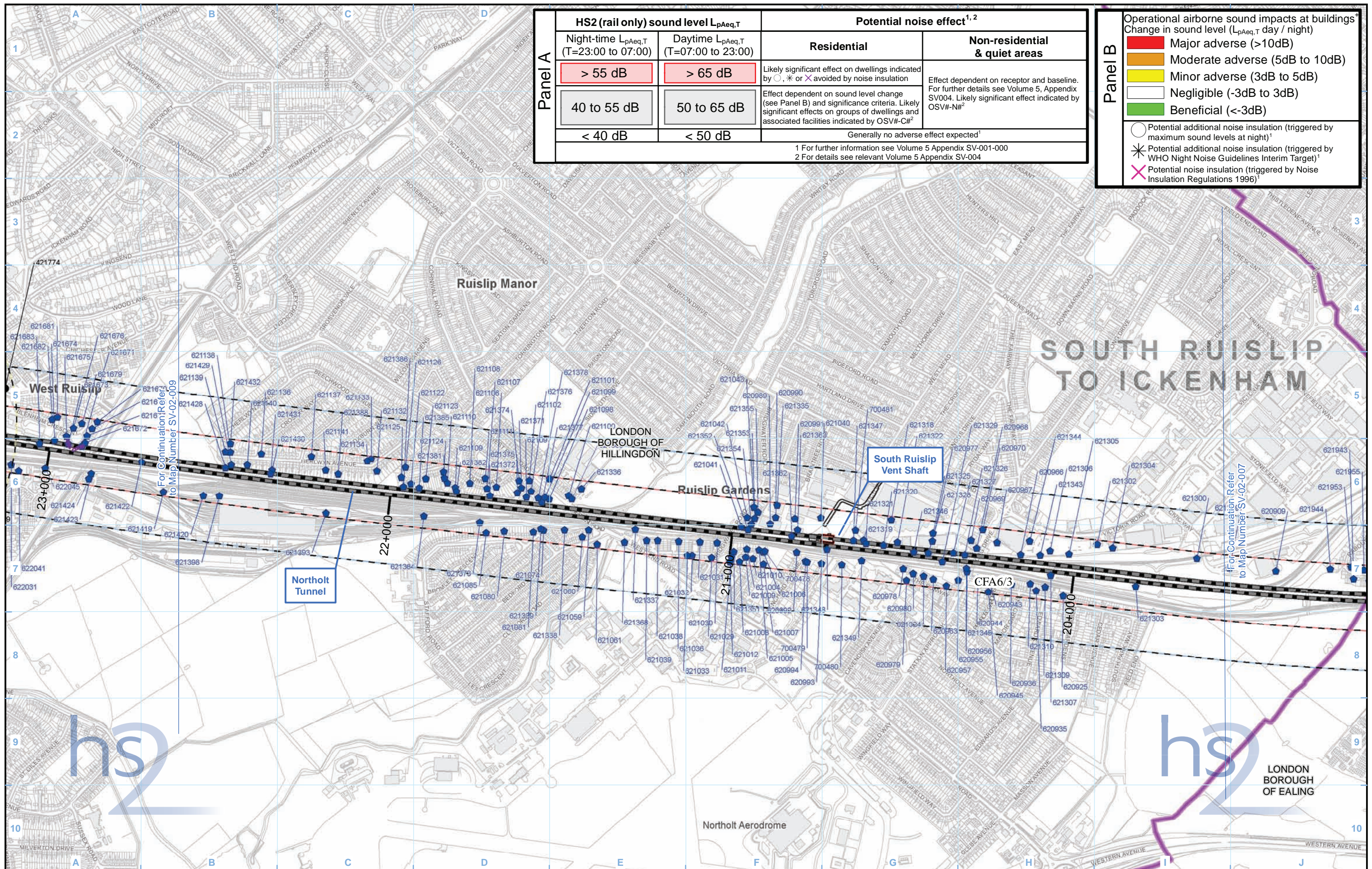
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Scale at A3: 1:10,000

0 100 200 300 400
Metres

Doc Number: C250-ARP-EV-MAP-000-003554

Date: 29/10/13



| Panel A | HS2 (rail only) sound level $L_{pAeq,T}$ | | Potential noise effect ^{1,2} | |
|---------|-----------------------------------------------|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| | Night-time $L_{pAeq,T}$ (T=23:00 to 07:00) | Daytime $L_{pAeq,T}$ (T=07:00 to 23:00) | Residential | Non-residential & quiet areas |
| | > 55 dB | > 65 dB | Likely significant effect on dwellings indicated by ○, * or ✕ avoided by noise insulation | Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# ² |
| | 40 to 55 dB | 50 to 65 dB | Effect dependent on sound level change (see Panel B) and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C# ² | |
| | < 40 dB | < 50 dB | Generally no adverse effect expected ¹ | |

1 For further information see Volume 5 Appendix SV-001-000
2 For details see relevant Volume 5 Appendix SV-004

| Panel B | Operational airborne sound impacts at buildings ¹ Change in sound level ($L_{pAeq,T}$ day / night) | |
|---------|-------------------------------------------------------------------------------------------------------------------|--|
| | Major adverse (>10dB) | |
| | Moderate adverse (5dB to 10dB) | |
| | Minor adverse (3dB to 5dB) | |
| | Negligible (-3dB to 3dB) | |

○ Potential additional noise insulation (triggered by maximum sound levels at night)¹
✱ Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)¹
✕ Potential noise insulation (triggered by Noise Insulation Regulations 1996)¹

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

+ Residential buildings only
* Labelled with total barrier height above rail level

Legend - Sound related features

- Committed developments (labelled as CFA#/#)
- Envisaged mitigation to avoid / reduce significant noise effects:
 - Landscaping and/or fence barriers*
 - Engineering e.g. cuttings (green tunnels separately marked)
 - Envisaged measures further reducing noise effects:
 - Other environmental features e.g. landscaping
 - Engineering e.g. cuttings
- Airborne sound study area

- Ground-borne sound & vibration study area (residential and non-residential)
- Ground-borne sound & vibration study area (highly sensitive non-residential)
- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Minor ground-borne noise or vibration impact*

Map Number: SV-02-008

Map Name: Operational Noise and Vibration Impacts and Likely Significant Effects (with Assessment Locations)

Community Forum Area CFA06: South Ruislip to Ickenham

hs2

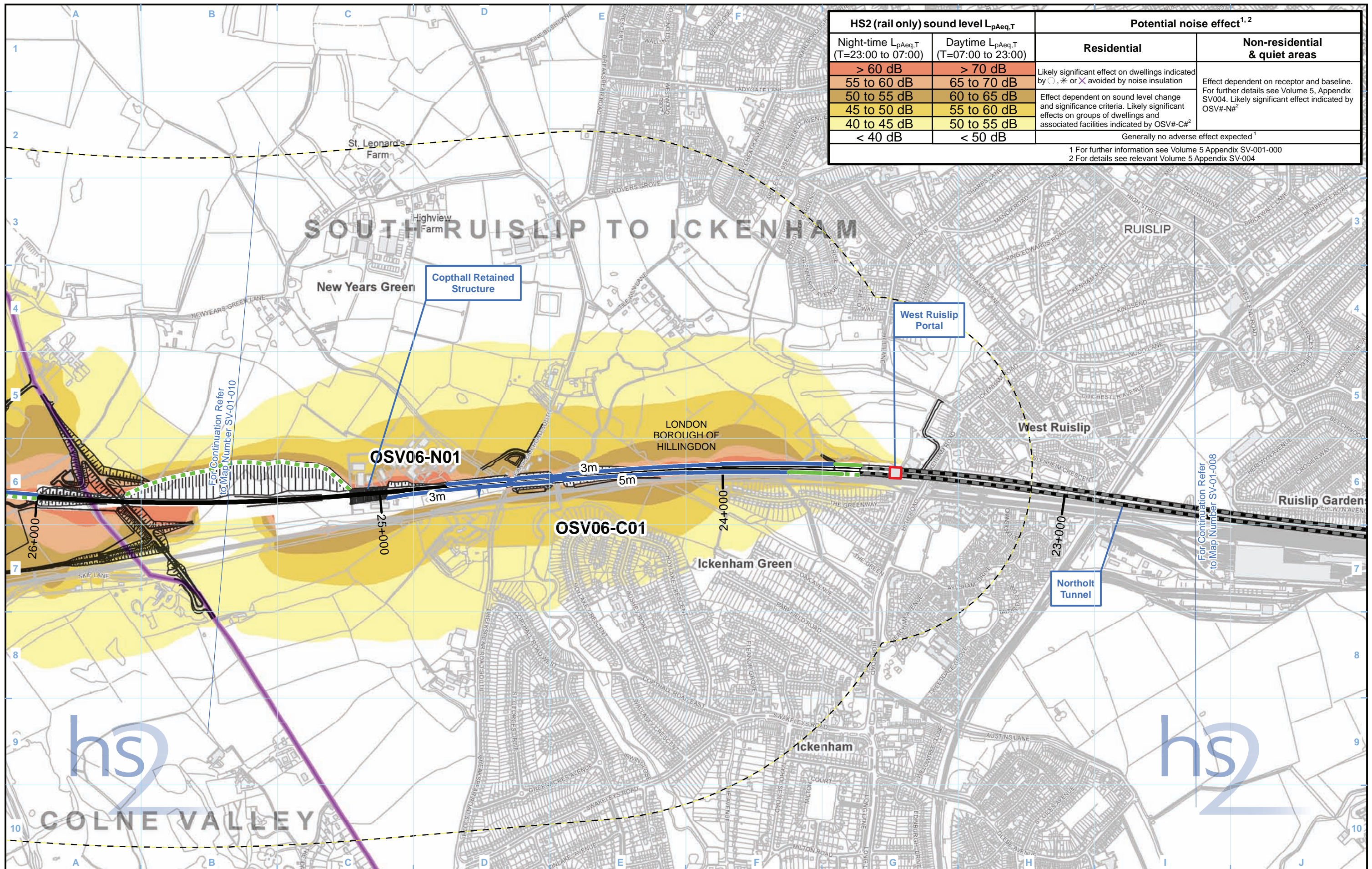
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Date: 29/10/13



| HS2 (rail only) sound level $L_{pAeq,T}$ | | Potential noise effect ^{1, 2} | |
|-------------------------------------------------------------------------------------------------------------------|--------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Night-time $L_{pAeq,T}$ (T=23:00 to 07:00) | Daytime $L_{pAeq,T}$ (T=07:00 to 23:00) | Residential | Non-residential & quiet areas |
| > 60 dB | > 70 dB | Likely significant effect on dwellings indicated by ○, ✱ or ✕ avoided by noise insulation | Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# ² |
| 55 to 60 dB | 65 to 70 dB | | |
| 50 to 55 dB | 60 to 65 dB | Effect dependent on sound level change and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C# ² | |
| 45 to 50 dB | 55 to 60 dB | | |
| 40 to 45 dB | 50 to 55 dB | | |
| < 40 dB | < 50 dB | Generally no adverse effect expected ¹ | |
| 1 For further information see Volume 5 Appendix SV-001-000 2 For details see relevant Volume 5 Appendix SV-004 | | | |

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

Legend - Sound related features

- Envisaged mitigation to avoid / reduce significant noise effects:
 - Landscaping and/or fence barriers*
 - Engineering e.g. cuttings (green tunnels separately marked)
- Envisaged measures further reducing noise effects:
 - Other environmental e.g. landscaping
 - Engineering e.g. cuttings

- Airborne sound study area
- Potential additional noise insulation (triggered by maximum sound levels at night)¹
- Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)¹
- Potential noise insulation (triggered by Noise Insulation Regulations 1996)¹

Map Number
SV-01-009

Map Name
Operational Sound Contour Maps and Likely Significant Effects

Community Forum Area CFA06:
South Ruislip to Ickenham

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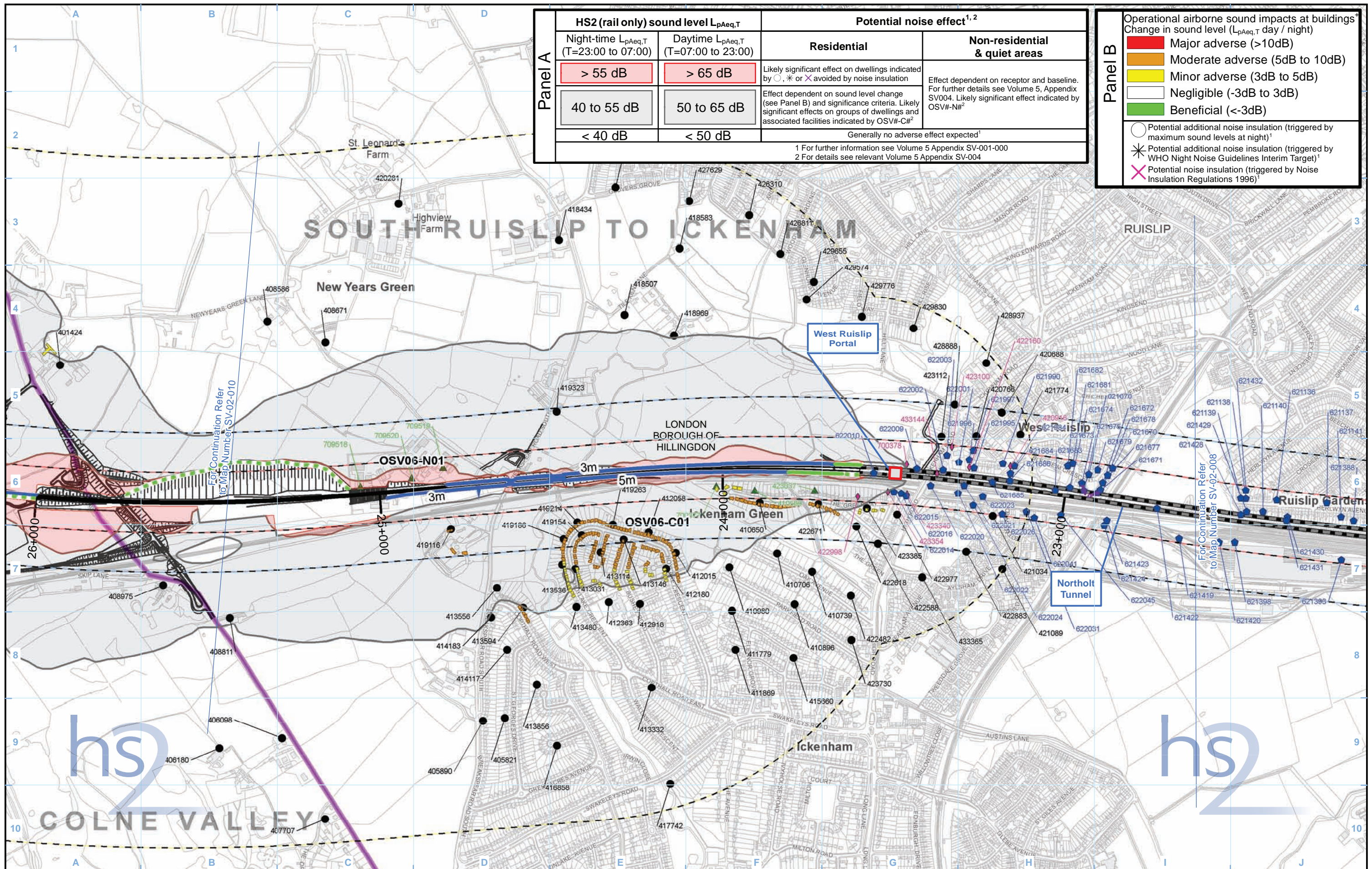
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Scale at A3: 1:10,000

0 100 200 300 400 Metres

Date: 29/10/13

* Labelled with total barrier height above rail level



| Panel A | HS2 (rail only) sound level $L_{pAeq,T}$ | | Potential noise effect ^{1,2} | |
|---------|-----------------------------------------------|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| | Night-time $L_{pAeq,T}$ (T=23:00 to 07:00) | Daytime $L_{pAeq,T}$ (T=07:00 to 23:00) | Residential | Non-residential & quiet areas |
| | > 55 dB | > 65 dB | Likely significant effect on dwellings indicated by ○, * or ✕ avoided by noise insulation | Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# ² |
| | 40 to 55 dB | 50 to 65 dB | Effect dependent on sound level change (see Panel B) and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C# ² | |
| | < 40 dB | < 50 dB | Generally no adverse effect expected ¹ | |

1 For further information see Volume 5 Appendix SV-001-000
2 For details see relevant Volume 5 Appendix SV-004

Panel B

Operational airborne sound impacts at buildings⁴
Change in sound level ($L_{pAeq,T}$ day / night)

Major adverse (>10dB)

Moderate adverse (5dB to 10dB)

Minor adverse (3dB to 5dB)

Negligible (-3dB to 3dB)

Beneficial (<-3dB)

○ Potential additional noise insulation (triggered by maximum sound levels at night)¹

* Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)¹

✕ Potential noise insulation (triggered by Noise Insulation Regulations 1996)¹

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

Legend - Sound related features

- Committed developments (labelled as CFA#/#)
- Envisaged mitigation to avoid / reduce significant noise effects:
 - Landscaping and/or fence barriers*
 - Engineering e.g. cuttings (green tunnels separately marked)
- Envisaged measures further reducing noise effects:
 - Other environmental features e.g. landscaping
 - Engineering e.g. cuttings
- Airborne sound study area

- Ground-borne sound & vibration study area (residential and non-residential)
- Ground-borne sound & vibration study area (highly sensitive non-residential)
- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Minor ground-borne noise or vibration impact*

Map Number

SV-02-009

Map Name

Operational Noise and Vibration Impacts and Likely Significant Effects (with Assessment Locations)

Community Forum Area CFA06:

South Ruislip to Ickenham

hs2

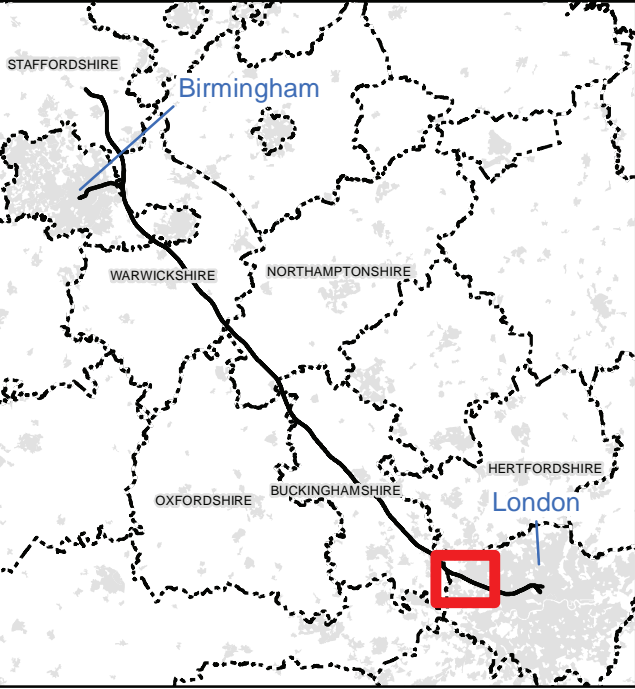
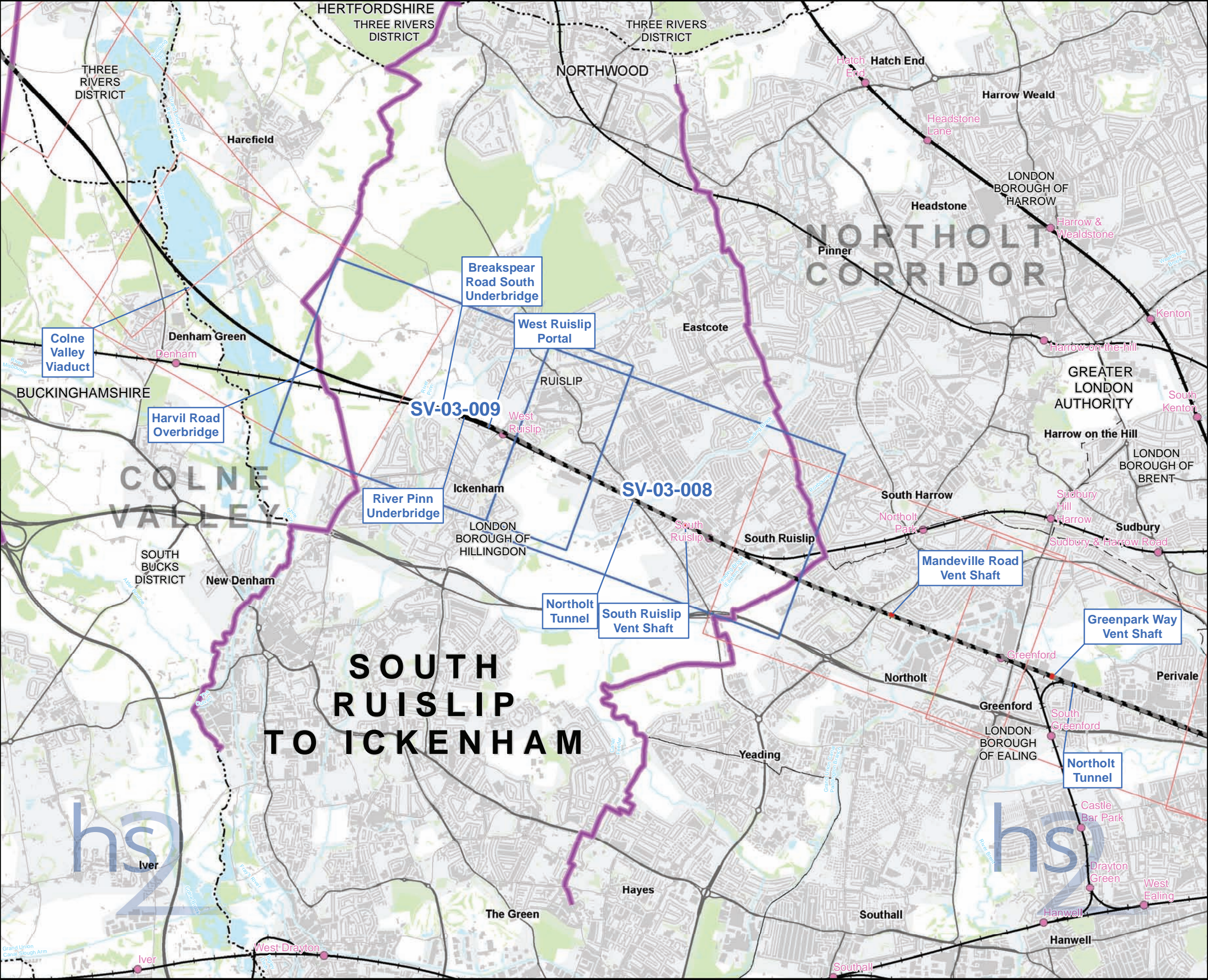
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Date: 29/10/13



Map Series Information:

The SV-03 figure series accompanies the construction noise & vibration assessments. It shows the locations at which a quantitative assessment of the direct effects of construction noise and/or vibration has been carried out. These are labelled as assessment locations with a reference number to enable cross-reference to the construction noise and vibration reports contained in Volume 5: Appendix SV-003 and Volume 5: Appendix SV-002.

The figure series also shows locations at which baseline sound measurements were carried out. These baseline measurement locations are labelled with a reference number to enable cross-reference to the baseline sound reports contained in Volume 5: Appendix SV-002.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

Main Map Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- Existing railway station
- County boundary
- District/Borough boundary

- Map sheets included in this community forum
- Map sheets not included in this community forum

Map Number

SV-03-INDEX-CFA6

Map Name

Index Map of:
Assessment and Monitoring Locations for
Construction Sound, Noise & Vibration Assessments

Community Forum Area CFA6:
South Ruislip to Ickenham

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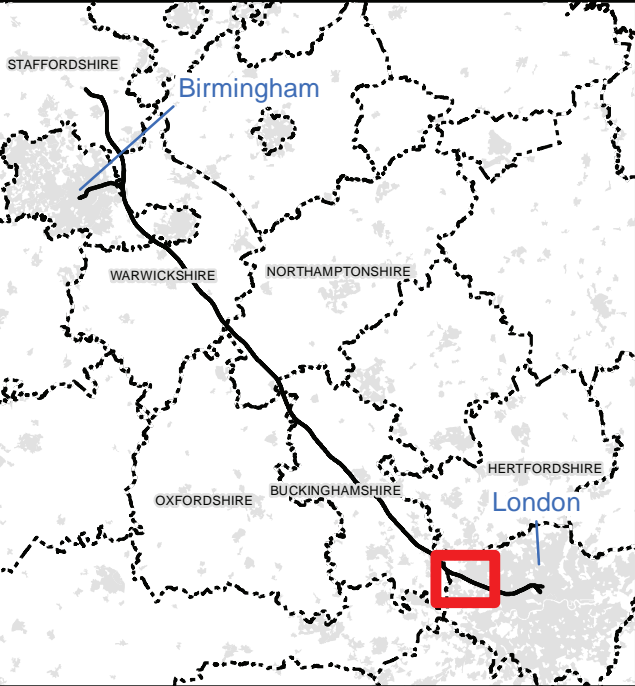
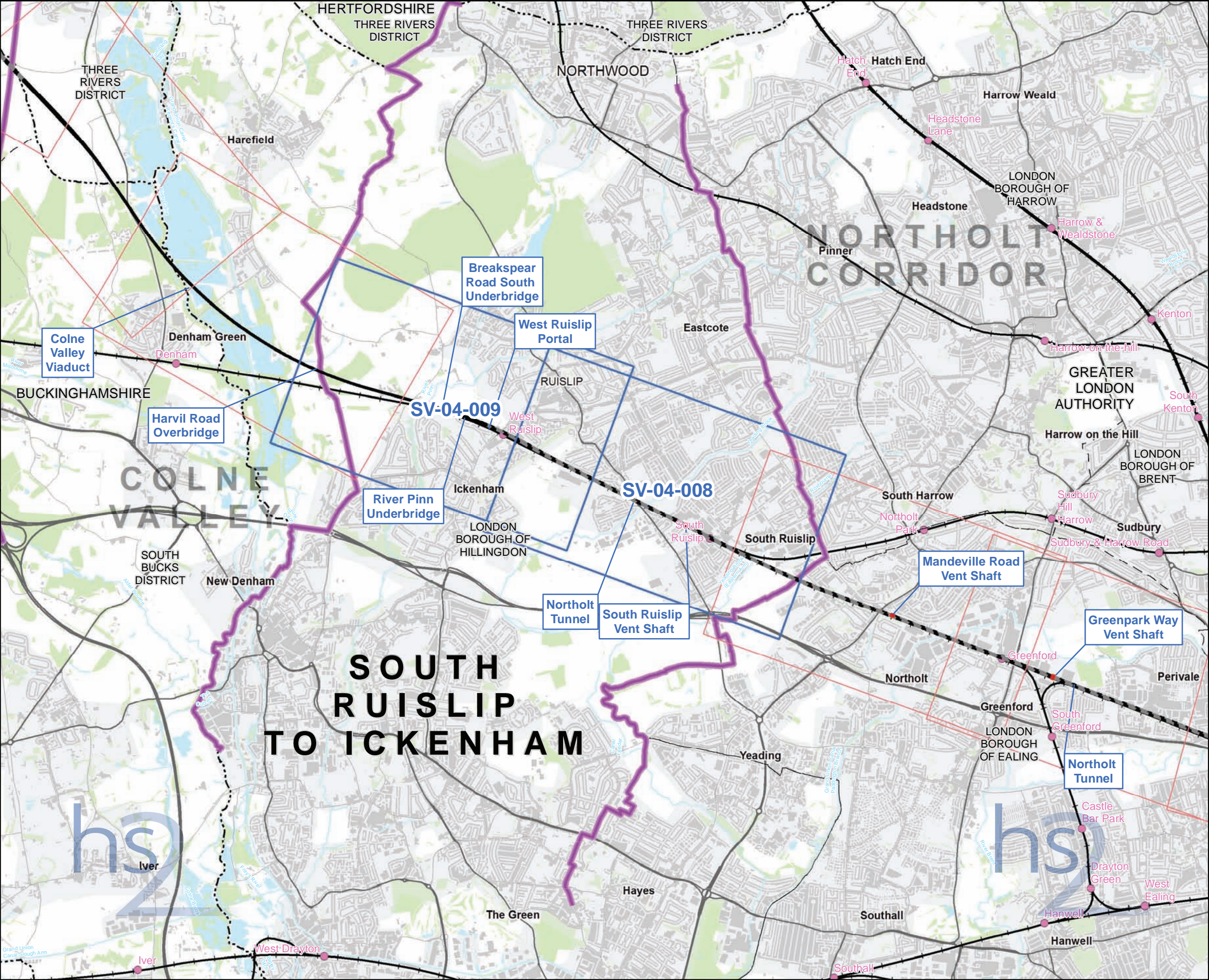
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Metres

Date: 29/10/13



Map Series Information:

The SV-04 figure series shows the locations at which a quantitative assessment of the direct effects of operational sound and/or vibration has been carried out. These are labelled as assessment locations with a reference number to enable cross-reference to the operational sound and vibration reports contained in Volume 5: Appendix SV-004 and Volume 5: Appendix SV-002.


The figure series also shows locations at which baseline sound measurements were carried out. These baseline measurement locations are labelled with a reference number to enable cross-reference to the baseline sound reports contained in Volume 5: Appendix SV-002.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

- Main Map Legend**
- Route in tunnel
 - Route on surface
 - Depot, station, headhouse or portal building
 - Community forum boundary
 - Existing railway station
 - County boundary
 - District/Borough boundary
 - Map sheets included in this community forum
 - Map sheets not included in this community forum

| | |
|------------|--------------------------------------------------------------------------------------------------------------|
| Map Number | SV-04-INDEX-CFA6 |
| Map Name | Index Map of: Assessment and Monitoring Locations for Operational Sound, Noise & Vibration Assessments |
| | Community Forum Area CFA6: South Ruislip to Ickenham |




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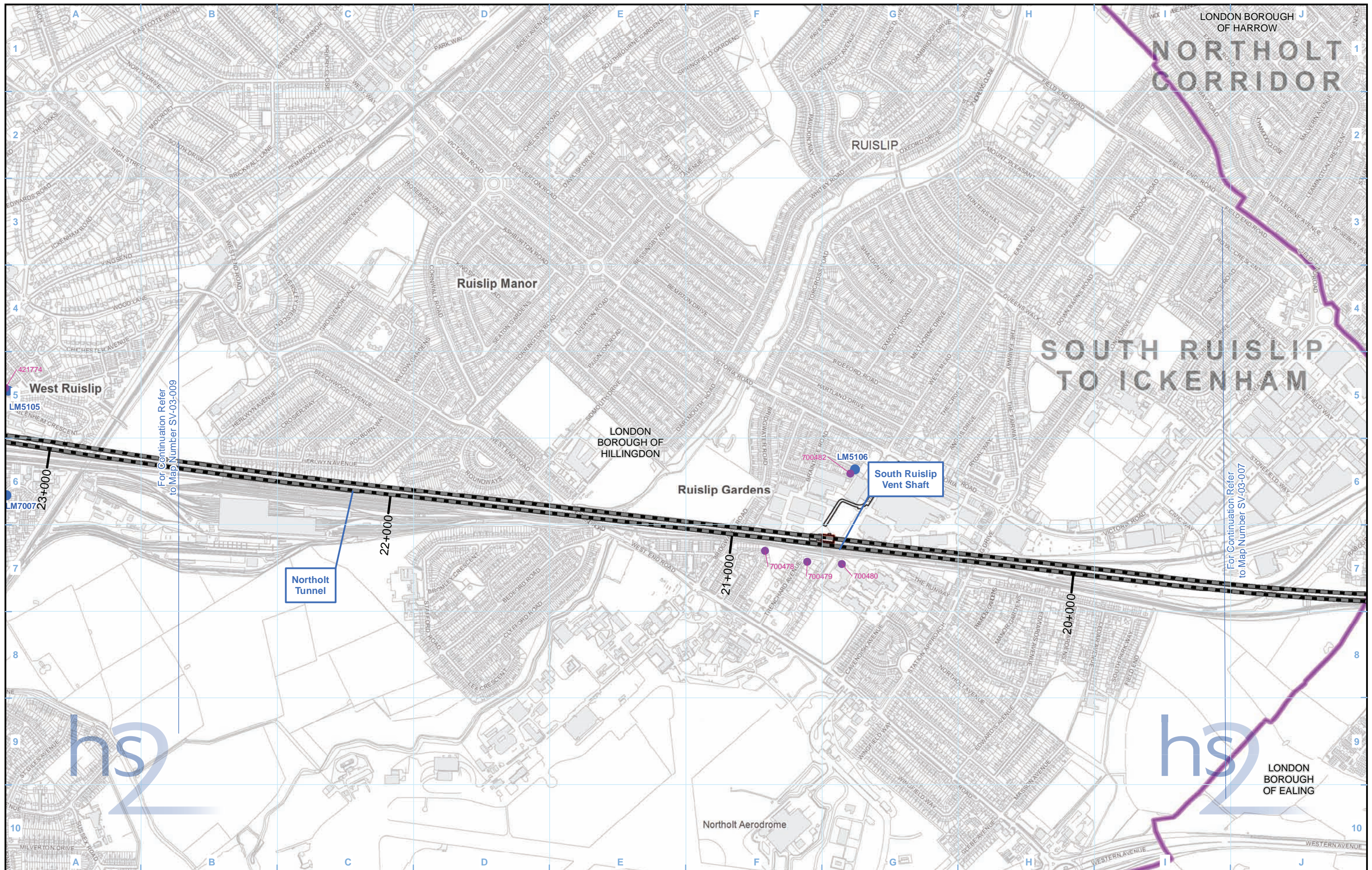


Scale at A3: 1:50,000



0 500 1,000 1,500 2,000
Metres

Date: 29/10/13



Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

Legend - Sound related features

- Construction airborne sound assessment location
- Construction vibration assessment locations
- Construction airborne sound and vibration assessment location
- Baseline measurement locations

labelled with Assessment Location ID reference number
(for details of the assessment results see relevant Vol 5 Appendix SV-003)

(labelled with Measurement Location reference code)

| | |
|----------------------------------------------------------|-------------------------------------------------------------------------------------------|
| Map Number | SV-03-008 |
| Map Name | Assessment and Monitoring Locations for Construction Sound, Noise & Vibration Assessments |
| Community Forum Area CFA06: South Ruislip to Ickenham | |

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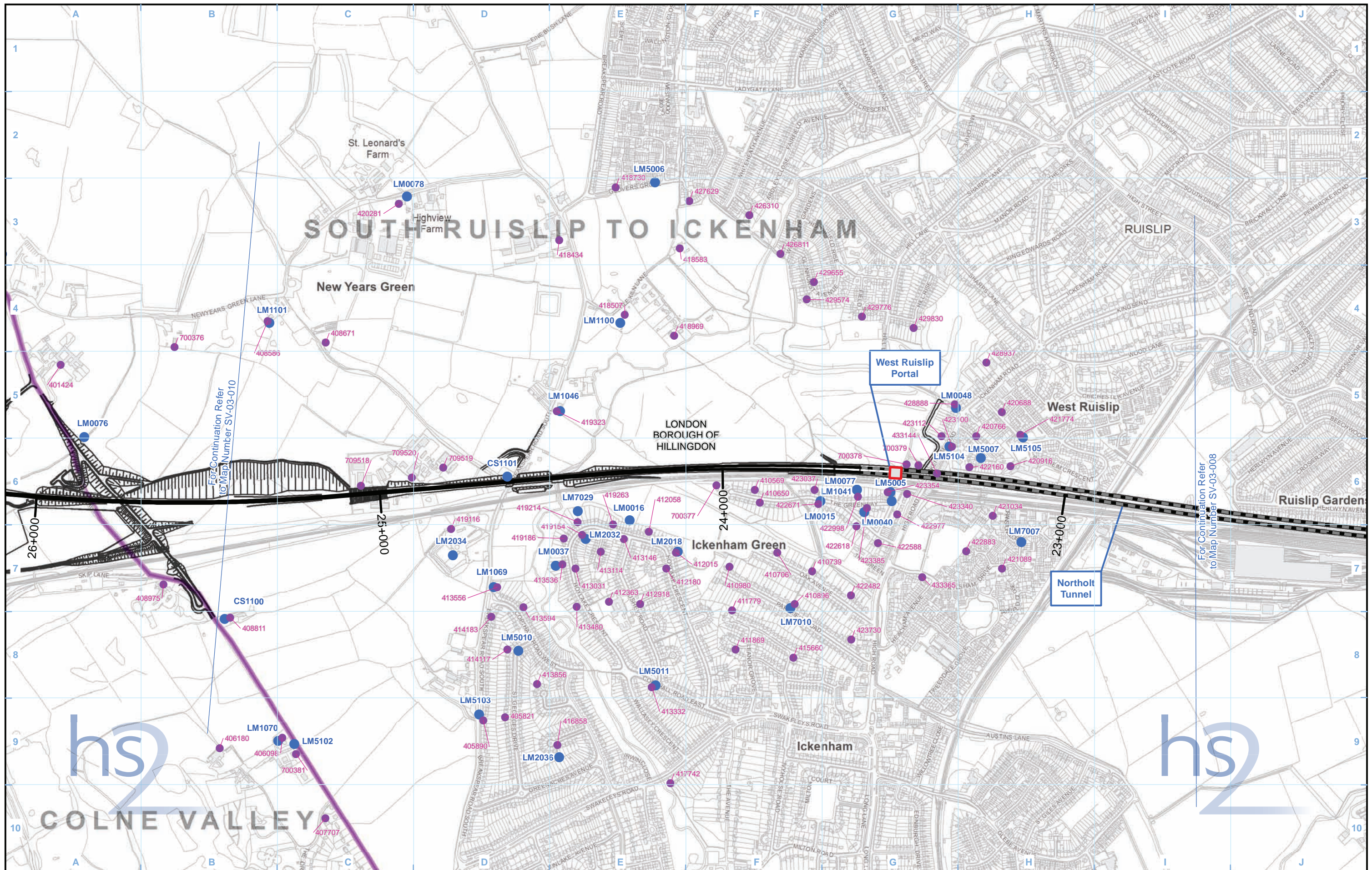
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Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks: Non engineering earthworks:

- Embankment
- Cutting
- Embankment
- Cutting


Legend - Sound related features

- Construction airborne sound assessment location
- Construction vibration assessment locations
- Construction airborne sound and vibration assessment location
- Baseline measurement locations

labelled with Assessment Location ID reference number
(for details of the assessment results see relevant Vol 5 Appendix SV-003)

(labelled with Measurement Location reference code)

| | |
|----------------------------------------------------------|-------------------------------------------------------------------------------------------|
| Map Number | SV-03-009 |
| Map Name | Assessment and Monitoring Locations for Construction Sound, Noise & Vibration Assessments |
| Community Forum Area CFA06: South Ruislip to Ickenham | |




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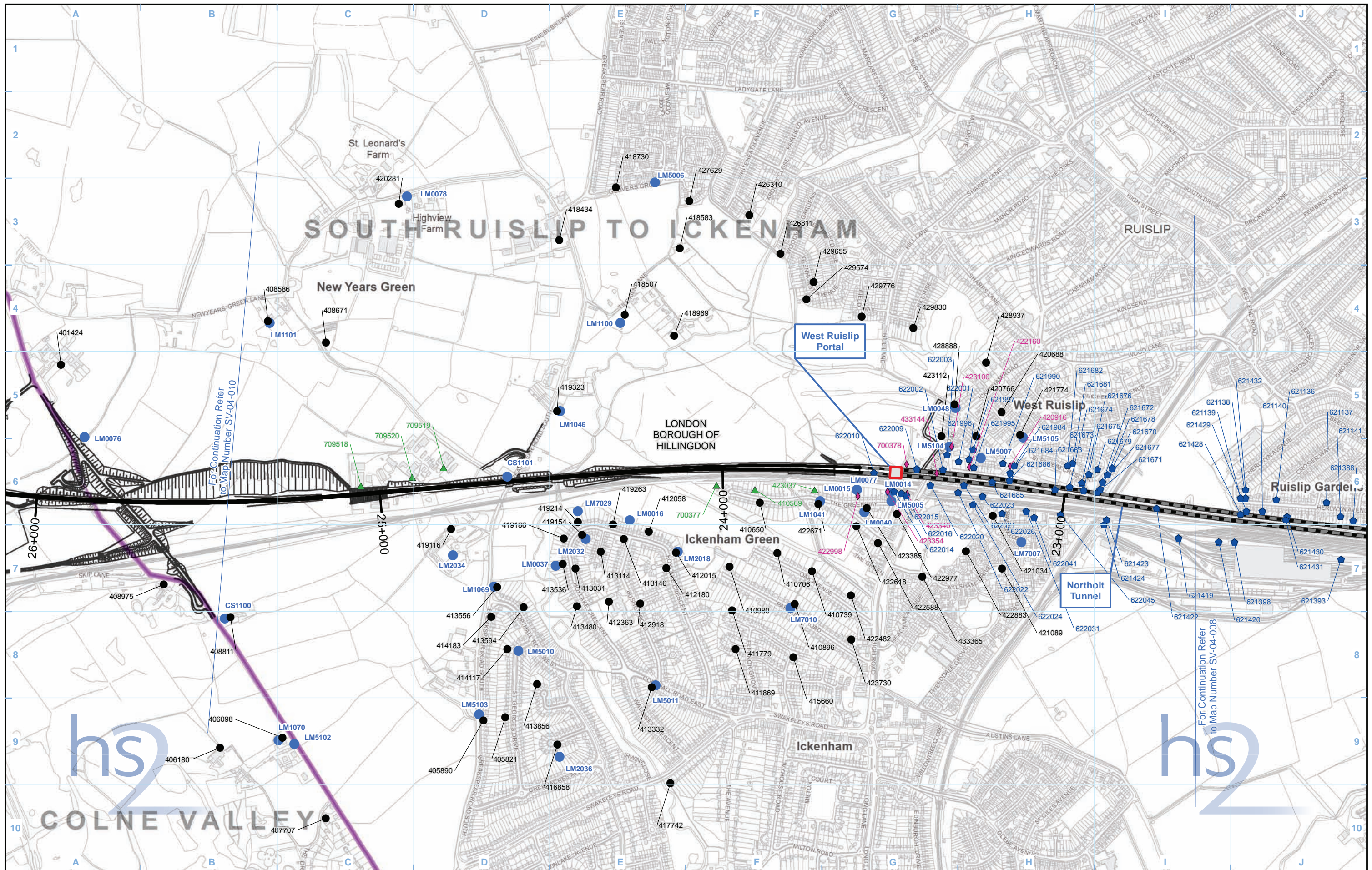
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Date: 29/10/13





Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks: Non engineering earthworks:

- Embankment
- Cutting
- Embankment
- Cutting

Legend - Sound related features

- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Baseline measurement locations

labelled with Assessment Location ID reference number
(for details of the assessment results see Vol 5 Appendix SV004)

labelled with Measurement Location reference code

Map Number: SV-04-009

Map Name: Assessment and Monitoring Locations for Operational Sound, Noise & Vibration Assessments

Community Forum Area CFA06: South Ruislip to Ickenham

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